APPLICANT INFORMATION AND SIGNATURE FORM
Guidance for Completing

1. **You will need a fully functional copy of *Adobe Acrobat version 7 or 8* (Standard or Professional) to complete, print, and save this form.** We recommend using version 8.1 for best results. Using *Adobe Acrobat Reader* will not permit you to save information that is entered in the form.

2. All numbers (including phone numbers and dollar amounts) must be entered whole without commas, hyphens, or parenthesis (e.g., "4150001234" instead of "415-000-1234")

3. **Required Signatures**: The original hardcopy of this form must be **signed by an Authorized Executive Officer** of the applicant organization. CIRM will not accept an application without this signature.

4. **Use of CIRM-funded Space**. Grant applicants may use CIRM-funded space for other than CIRM-funded research activities. Grantees, however, need to be particularly careful in properly accounting for activities that are housed in the space provided under this grant. With respect to indirect costs such as facilities and administrative (F&A) costs, institutions must adhere to the guidelines in applicable federal cost principles such as OMB Circular A-21 (Colleges and Universities) **and should consult with their own counsel regarding compliance with these principles**. These documents describe how to keep budget and accounting records so as to demonstrate that these costs have been properly allocated among all sources of research funding, including CIRM and the federal government. Grantees should also be familiar with CIRM's Grant Administration Policy (Chapter V section B, paragraph 4) relating to unallowable facilities costs on research grants where CIRM has funded a facilities grant.

5. **Adjustments to Actual Costs**. Grant applicants are advised that the amount of CIRM funding approved by the ICOC is the maximum amount available. The amount of CIRM funds awarded will be adjusted if actual costs of the project are lower than estimates used in the application (e.g. construction contract costs). The adjustment will be based on (1) the revised total cost based on award of a construction contract, and (2) maintaining the proportion of CIRM funding to applicant funding (including matching funds and leverage funds) as approved by the ICOC. This adjustment will be made prior to allocation of any CIRM funds. Similarly, any project cost savings available at the completion of the project (e.g. remaining contingency) will be shared between CIRM and the applicant proportionate to the respective percentage share of the overall costs of the project.

6. **Commitment to Project Scope as described in application**. Grant applicants are advised that if the ICOC determines to award funds to an applicant, the applicant, upon signing the Notice of Grant Award, will be committed to deliver a project of the scope described in its application and on the same schedule, regardless of the level of CIRM funding approved.

CIRM Major Research Facilities Grant
Applicant Information & Signature Form

FA1-00613-1

Applicant Information

Applicant Organization	University of California, Los Angeles		
Application Number	FA1-00613-1	Enter the application number you received via email from CIRM (for example "FA1-99999-1", where "9" represents any digit).	
Facilities Contact	Steven Peckman	Email	speckman@mednet.ucla.edu
Title	Associate Director, Broad Stem Cell Research Center	Telephone	(310) 794-4919

Authorized Executive Officer* (e.g., Provost, CEO)

Name	Prefix: Dr.	First: Gene	Middle: D.	Last: Block	Suffix:

Degree	Ph.D.	Choose the highest degree earned. If your degree is not listed, enter it in the drop-down box.	
Position Title	Chancellor		e.g., Provost, CEO
Address	Chancellor's Office		Please provide a complete mailing address to which confidential information about your application may be sent.
	Box 951405, 2147 Murphy Hall		
City	Los Angeles	CA	Zip Code 90095-1405
Phone Number	(310) 825-2151	Ext	Fax Number
Email (required)	GBlock@conet.ucla.edu	This email address identifies you to CIRM. Please use this email address for all correspondence with CIRM.	

***Authorized Executive Officer** - a senior organizational official who has the authority, **or who has been delegated the authority**, to commit funds for major facilities on behalf of the organization and who has the authority, **or who has been delegated the authority**, to commit the organization's resources to realize their strategic stem cell research program.

CIRM Category of Stem Cell Research Program

Please select the appropriate entry below to indicate the category for which you are competing in your application.

- (●) CIRM Institute (CIRM award of up to $50 million)
- ( ) CIRM Center of Excellence (CIRM award of up to $25 million)
- ( ) CIRM Special Program (CIRM award of up to $10 million)

CIRM Funds Requested

CIRM Funds Requested	$29,646,274
Matching Funds @ 20%	$ 5,929,255
Leverage Funds	$ 6,258,949
Total	**$41,834,478**

Signature

Authorized Executive Officer Dr. Gene D. Block

I, the Authorized Executive Officer for the applicant organization, certify that the information presented in this application is true and correct.

Signature: Authorized Executive Officer _____ Date _____

SECTION 1: EXECUTIVE SUMMARY

Funding of $29,646,274 for the UCLA CIRM Institute, under the direction and management of the UCLA Broad Stem Cell Research Center (BSCRC) Director Owen Witte, MD, will provide needed stem cell dedicated facilities and serve as a scientific hub to support ongoing basic to clinical interdisciplinary stem cell research efforts, including established related collaborations with the California Institute of Technology (Caltech). Our proposal illustrates UCLA's profound commitment to stem cell science, technology, collaboration, faculty recruitment, space, and cutting edge laboratory design in the pursuit of the highest scientific, medical, and ethical goals.

Dr. Witte is perfectly suited to lead this project as he is a member of the National Academies of Science and its Institute of Medicine, a Howard Hughes Medical Institute investigator, former director of the UCLA Medical Scientist Training Program (MSTP), and is involved in translational research such as the development of new therapeutics like Gleevec. Dr. Witte, in his role as BSCRC Director, which is a campus-wide initiative, reports directly to the UCLA Chancellor.

CIRM funding will support ~21K+ asf of laboratory and vivarium facilities (hereafter referred to as the "Facility" or "Institute") that are not subject to federal human embryonic stem cell (hESC) research restrictions in the under-construction Life Sciences Replacement Building (LSRB), including: (1) Research labs, (2) Core facilities and shared support resources, and (3) Career Development space. The Institute Facility will also support our CIRM Training Grant and stem cell education programs, interface with other related facilities adjacent to the Institute, less than a five minute walk, such as basic biology, chemistry, engineering, medicine, and clinical/translational programs, including our FDA-compliant Good Manufacturing Practices (GMP) suite & CIRM supported Shared Research Laboratory (SRL), including the Good Tissue Practice (GTP) suite, as well as the UCLA Hospital (the most technologically advanced hospital in the world and ranked the Best in the West for the last 18 consecutive years by US News & World Report), the Jonsson Comprehensive Cancer Center (JCCC), the AIDS Institute, the Schools of Dentistry, Medicine, and Engineering, and the College of Letters and Science (See Figure 1).

Architect Jon C. Jackson of the award winning firm Bohlin Cywinski Jackson specifically designed the building, which includes the proposed CIRM Institute, to facilitate collaborative cutting-edge open-bay research in laboratories that will serve senior, mid-career, and newly recruited scientists, engineers, and clinicians. The design, core resources, mix of faculty, and physical proximity to related research will promote collaborations in basic, translational, and clinical sciences by serving as a technology and laboratory hub for groundbreaking stem cell research at UCLA. As seen in Figure 1, the Facility is in the ideal campus location and physical environment to foster the synergy that permeates the university's stem cell efforts.

The research programs, core services, and young faculty development offered in the Facility will provide essential innovative resources and mentoring of researchers trained to work with hESC. This will further increase the prominence of California as a leader in hESC research thus ensuring the increased availability of a skilled academic and industry workforce to fill jobs in academia as well as the private biotechnology and pharmaceutical industry now and in the future. These investigators will be valuable resources for California institutions and the potential to collaborate with them will incentivize others to relocate here.

The Facility is designed to integrate basic and translational research with the goal of translating laboratory discoveries into patient care. The Institute based stem cell programs promote collaboration of intra- and extra-mural researchers and embrace physician scientists with the

intent of bringing regenerative medicine and hESC based diagnostics to the clinic. As described in the application, laboratories with critical core services will provide unique support for hESC research and develop new technologies intended to decrease the time and costs of bringing scientific discoveries to patients. This "bench to bedside" philosophy is consistent with our established track record of applying basic research to treat diseases. Thus, in addition to the direct benefit to patients and their families, the use of hESC to treat chronic diseases could reduce health care costs.

FACILITY, SCIENTIFIC PROGRAMS & CORES:
The proposed Facility with integrated Basic (**X**), Preclinical (**Y**), and Preclinical/Development (**Z**) research components will support on-going basic to clinical interdisciplinary stem cell research efforts, including established related collaborations with Caltech with the goal of translating laboratory discoveries to patient care. The X, Y, and Z components include 9 major program areas integrated across basic, translational, and clinical research with unique Core resources that were chosen based on their innovative application to stem cell science and successful track record to date. The research programs include: (i) *Embryonic Stem Cell (ESC) Fate Decisions,*(ii) *Neural Stem Cells* (including autism and related disorders, stroke, ALS, spinal cord repair, and demyelinating diseases), (iii) *Epithelial Cell Biology*, (iv) *Hematopoietic Stem Cells,* (v) *Cancer Stem Cells,* (vi) *Generation of HIV Resistant Stem Cells*, (vii) *Development of Cellular Vaccines*, (viii) *Engineered Immunity Consortium*, and (ix) *Cardiovascular Stem Cell/Progenitor Studies*. The Facility also includes eight of our **10 UCLA CIRM grantees** (in **bold** type) directing laboratories or Core services.

The proposed Institute represents the largest single area of contiguous stem cell space on campus and will centralize key new unique core resources devoted to stem cell research. The Facility embodies innovation in design and function with an open-bay laboratory concept and a large percentage of space dedicated to shared laboratory and Core technical facilities to foster interdisciplinary research. UCLA has great strengths in basic biology, medical sciences, physical sciences, and engineering that all unite in our stem cell efforts. The laboratories in the proposed Facility are specifically designed to accommodate these varied multi-disciplinary projects. Specific space has also been reserved for the training and career development of young clinical faculty who are critical to the translation of new stem science to the direct benefit of patients.

The Institute programs are enhanced by interactions with Caltech including our highly collaborative UCLA-Caltech engineered immunity consortium that will express T cell receptor genes in hematopoietic and embryonic stem cells, as well as in induced pluripotent stem cells (iPS) to produce improved cellular immunity to combat cancer and related diseases and the Caltech-UCLA Nanosystems Biology Cancer Center that is developing new ultrasensitive diagnostic and therapeutic technologies for stem cells. These projects and others will interact with our clinical research programs to conduct cell based clinical trials and evaluate applied stem cell therapies.

***Core Resources*:** The Facility includes six new critical core laboratories to provide technical and developmental support for the programs including: (a) large scale computational & bioinformatics analysis of stem cells; (b) advanced cell separation technologies; (c) bioengineering for stem cell growth including organ scaffolds; (d) advanced & vital microscopy; (e) advanced mouse genetics; (f) vector production, (g) dedicated vivarium. These cores complement existing cores directly adjacent to the Facility for micro-fabrication, small molecule screening, hESC derivation and banking, GMP production for clinical trials, and the CIRM sponsored Shared Research Laboratory core facilities directly across the street.

CIRM Goals: In addition to the Facility housing interdisciplinary, cutting-edge technology, laboratories, and innovative core services for hESC research unimpeded by federal restrictions, it will connect the taxpayer stem cell investment to the overall UCLA teaching and research mission. Taken together, the anticipated substantial increase in stem cell faculty over the next several years combined with recently opened space, and facilities to become available in the Facility, will fulfill our vision of making UCLA one of the premier centers for stem cell research. UCLA, as a single site, with its college and 11 professional schools, receives ~$914M in total extramural research support resulting in a major economic effect throughout the region.

The UCLA CIRM Institute builds on a strong foundation of basic and clinical research and further solidifies on-going collaborations with Caltech including research and joint training programs (MD/PhD and research fellowships). The UCLA CIRM Institute will further link the activities of two premier research universities and will be an important step towards bringing hESC science and technology from the laboratory to the bedside.

The Facility based stem cell programs promote collaboration of intra- and extra-mural researchers and embrace physician scientists with the intent of bringing regenerative medicine and hESC based diagnostics to the clinic. As described in the application, laboratories with critical core services will provide unique support for hESC research and develop new technologies intended to decrease the time and costs of bringing scientific discoveries to patients. This “bench to bedside” philosophy is consistent with our established track record of applying basic research to treat diseases. Thus, in addition to the direct benefit to patients and their families, the use of hESC to treat chronic diseases could reduce health care costs.

Cost Evaluation: This application represents the amount to construct the proportionate share of LSRB to be occupied by the UCLA CIRM Institute. The cost to construct this floor offers economies of scale that would not be available to the Institute if it had to acquire a site by itself and construct a new facility. Analysis has confirmed that the third floor of LSRB can meet the requirements for stem cell research without modification. The amount of space in LSRB available to CIRM is not otherwise available in any other campus facility without displacing existing programs, which would be costly and inefficient, and would not be accomplished within the two year urgency time frame. Leasing or purchasing off-campus space is not an option since there is no nearby space readily suitable for laboratory use. The central location of LSRB, in close proximity to UCLA professional schools, the College of Letters and Science, and other institutes and centers (Figure 1), will also provide faculty with access to shared resources in adjacent facilities.

Sustainability: LSRB is UCLA’s first wet laboratory building that has been designed to achieve high performance energy efficiency standards under the Laboratory for the 21st Century (LABS 21) and UC-Equivalent New Construction green building programs. The design incorporates many sustainable features focused on reducing the high energy and water consumption needs that are typical for these types of facilities. The project, with 40 points currently assigned to the building design, is very close to achieving the 41 points required for a LEED “silver” rating.

Building Innovation: LSRB embodies a new approach to research laboratory design that provides open-bay construction to encourage communication and collaboration in scientific discovery. Other innovative design elements include a high degree of natural light brought deep into the interior of the building, a mechanical system designed to match air volumes in the laboratories to actual demand generated by the sash position of the fume hoods, and sun shades on the exterior of the building that reduce heat gain and glare to achieve energy efficiency.

Urgency: LSRB commenced construction in June 2007 (See Figure 3 for an aerial view of progress to date). UCLA is firmly committed to completing this project by May 2010, within the two year time frame from award. Risk related to project approvals, procurement of financing, environmental approvals, site conditions and bid risk have all been mitigated and their respective milestones have been met. UCLA has a successful track record of projects involving collaboration with PCL Construction Services, the general contractor on the project. PCL's most recent construction status report shows that the project is ahead of the projected schedule. In addition to LSRB, PCL has recently completed three other campus projects involving both renovation and new construction, with total project costs ranging from $7.2 million to $102.6 million. These three projects received their temporary certificates of occupancy on schedule.

Leverage and Matching Funds: In compliance with this RFA, UCLA is committed to supporting CIRM's objective of encouraging investments in the Institute through matching and leverage funds. Our 20% matching funds represent $5,929,255 of Group 2 equipment. This equipment will be funded by the UCLA Chancellor and gift funds provided to support the BSCRC in 2007 by the Broad Family Foundation.

Our leverage funds total $6,258,949 and include the amount spent to date on the main project, the cost to design the additional floor to be assigned to the UCLA CIRM Institute, and the amount to cover the proportional share of site preparation work that preceded construction of LSRB. It also includes a total of $3,492,500 for additional Group 2 equipment in the amount that is necessary to make the laboratories fully operational, including $1,913,389 of equipment purchased from 8/24/07 to date, and $1,579,111 of match in addition to the 20% requirement. Further, UCLA has identified $768,300 in existing Group 2 equipment that will be relocated to the Facility in support of stem cell research. This value is not reflected in the project budget, but represents another level of commitment that UCLA has to this project's long term success (See Attachment 4).

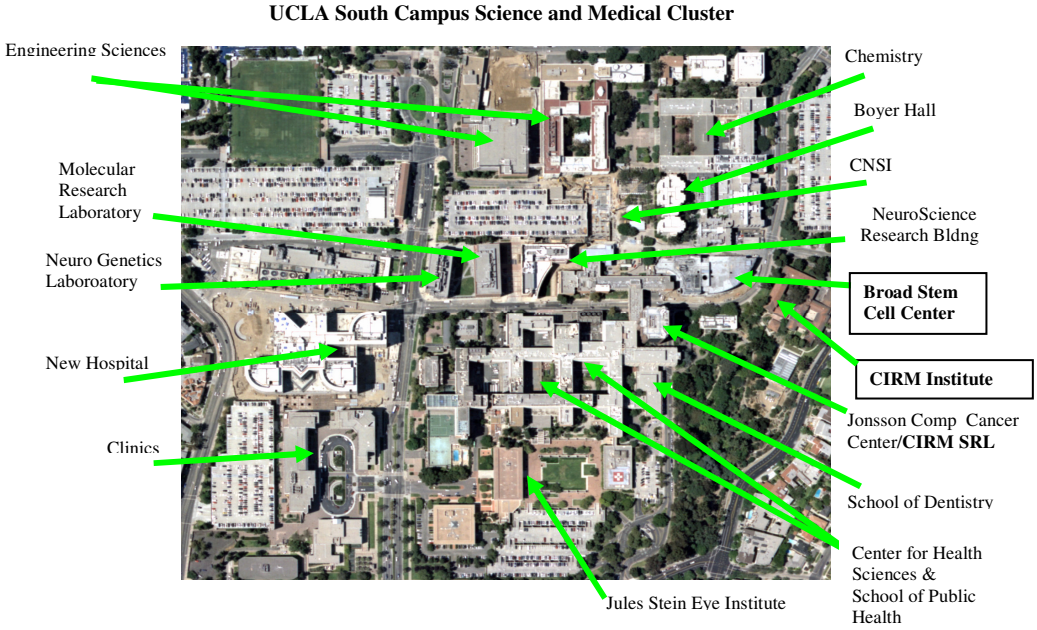

Figure 1: Aerial view of UCLA south campus with the proposed CIRM Facility & the CIRM-SRL BSCRC, JCCC, Hospital, Clinics, CNSI, Engineering, Chemistry, etc.

SECTION 2: MANDATORY REQUIREMENTS

SECTION 2A: Nonprofit status.
UCLA is part of the Regents of the University of California which is a public, nonprofit educational institution of the State of California.

SECTION 2B: For applicants that are part of the University of California, provide detailed information about any private business use to take place within the facility to be funded by CIRM.
We do not plan to have any private business use of the Facility. The September 20, 2005 UC Regents Action Item to approve external financing for the Life Sciences Replacement Building included the following representation:

> "The Officers of the Regents be authorized to provide certification to the lender that interest paid to the Regents is excluded from gross income for purposes of federal income taxation under existing law."

SECTION 2C: Review Exhibit 1 of the GAP document which must be completed by the applicant and prime contractor in order for CIRM to allocate construction funds and provide assurance that all construction and renovation will be in accordance with State of California prevailing wage requirements.
The executed construction contract for the Life Sciences Replacement Building currently requires the contractor (PCL) to meet all State of California prevailing wage requirements (See Attachment 1). We reviewed the relevant GAP Exhibit as instructed and are happy to provide the signed document upon notice of possible funding.

SECTION 2D: Provide plan to meet goal of using CA suppliers.
UCLA's LEED-equivalency requirement to meet LEED Credit MR 5.1 requires that 20% of building materials (by cost) are regionally manufactured materials (See Attachments 2 and 3).

SECTION 3: PROGRAM AND PROJECT DESCRIPTION

SECTION 3A: Program Objectives

The Facility will contribute to the development of UCLA stem cell research by: (1) housing stem cell programs from diverse scientific disciplines in a central location thus promoting the sharing of scientific ideas and collaboration, (2) providing critical and unique core services to stem cell scientists, (3) facilitating the development of young physician scientists who will play critical roles in translational research through the depth and breadth of the proposed programs, as well as the development of young basic scientists by providing them with substantial lab space and immediate access to senior scientists with related research interests, (4) supporting continued cutting-edge collaborations with Caltech, and (5) supporting the objectives of our CIRM Training Grant and stem cell education programs. The 15 stem cell faculty laboratories in the proposed Facility as well as access to 6 critical, innovative, and unique core facilities including advanced mouse genetics and microfluidics, will promote synergy among various labs both within and outside the Facility, and serve as a focal point for our ongoing efforts in translational cellular research. The central location of the Facility, in close on-site proximity to the UCLA professional schools (medicine, engineering public health, dentistry, nursing), the college of letters and science, and other institutes/centers as seen in Figure 1, will allow faculty easy access to their colleagues in adjacent buildings as well as to the GMP suite, hESC stem cell bank and derivation cores, and the CIRM sponsored GTP-SRL directly across the street.

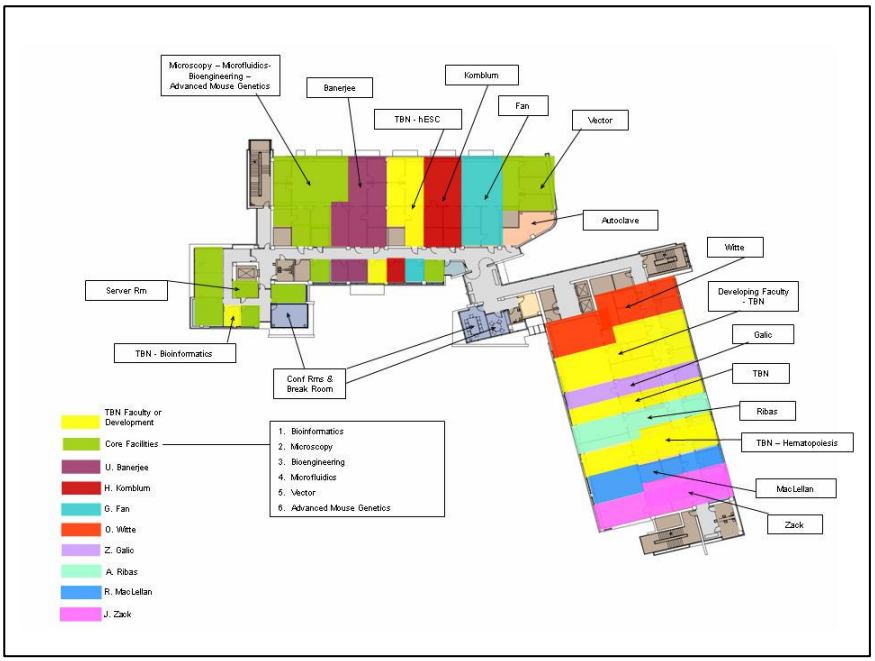

Figure 2: The proposed Facility including basement vivarium (not pictured) is ~21K asf of interdisciplinary stem cell laboratories & cores that are not subject to federal restrictions.

Our plans to hire at least six additional stem cell faculty over the next several years, augmenting the six young stem cell faculty hired since 2005, (three of whom are CIRM funded), and creating the proposed Facility, will achieve the goal of making UCLA one of the premier centers for stem cell research. The Facility will also further link the on-going activities of two premier research institutions, UCLA and Caltech, completing an important bridge to bringing hESC science and technology from the laboratory to the bedside.

The Facility will integrate our stem cell programs by: (1) providing space for stem cell scientists from various disciplines (e.g., microbiology, immunology, developmental biology, bio-chemistry, engineering, medicine, pathology, translational programs) in one location thus promoting the sharing of scientific ideas and collaboration, (2) providing critical and unique core services to stem cell scientists, and (3) facilitating the development of young physician scientists who will

play important roles in translational research through the depth and breadth of the proposed programs (See Figure 2).

Moving basic discoveries to clinical development and patient care is dependent upon close interactions between basic and clinical researchers, and the research enterprise at UCLA is organized to promote this exchange. Junior stem cell clinical faculty will have laboratory space adjacent to senior faculty in the Facility and access to faculty experts directing all related Cores. The allocation of Facility labs ensures that Basic (**X**), Preclinical (**Y**), and Preclinical/Development (Z) elements are represented by junior and senior faculty. The structure ensures that members of the basic and clinical communities have shared facilities and constant interaction. For example, in addition to the basic researchers who will direct laboratories or cores in the Facility, we have taken care to ensure that half of them, including, Kornblum, **Kasahara, Kurdistani,** MacLellan, Ribas, **Teitell, Witte**, and Wu are physician scientists.

(1) LOCATING STEM CELL PROGRAMS AT ONE SITE PROMOTES SHARING OF SCIENTIFIC IDEAS & COLLABORATION

The proposed Facility with X, Y, and Z research components integrate nine major research programs across basic, translational, and clinical research with unique Core resources that were chosen based on their innovative application to stem cell science and successful track record to date. The research programs including established related collaborations with Caltech, include: (i) *Embryonic Stem Cell (ESC) Fate Decisions,*(ii) *Neural Stem Cells* (including autism and related disorders, stroke, ALS, spinal cord repair, and demyelinating diseases), (iii) *Epithelial Cell Biology*, (iv) *Hematopoietic Stem Cells,* , (v) *Cancer Stem Cells,* (vi) *Generation of HIV Resistant Stem Cells*, (vii) *Development of Cellular Vaccines*, (viii) *Engineered Immunity Consortium*, and (ix) *Cardiovascular Stem Cell/Progenitor Studies*.

The advanced technical centers, including microfluidics and bioinformatics/computational suites will serve as a natural center of activities for a major portion of the campus stem cell science program. The blend of senior and junior faculty with laboratories in the Facility and supervising the technical centers was carefully considered to enhance mentorship and provide leadership for the group efforts both on campus in adjacent buildings and in the Institute that is needed to translate bench discoveries to the bedside. As a result, the Facility will serve as a hub for all campus stem cell scientific activity with the target of translating discoveries to clinical applications.

The close proximity of many outstanding investigators with similar research interests in stem cell science will provide easy access to colleagues of different yet complementary expertise. The presence of shared core facilities will further encourage investigators from within the Facility and other campus laboratories to come together, resulting in increased interactions and collaborations. The innovative open-bay laboratory floor plan of the proposed Institute will promote sharing and cross-fertilization of scientific ideas through close interaction of research teams and technical staff, promote sharing of research, technical personnel, and resources. Additionally, the flexible laboratory space assignment will support scientifically diverse research teams who will be assigned space by the BSCRC based on their interest in and ability to address important stem cell problems. The proposal ensures that the Facility is only used by dedicated and productive scientists engaged in quality stem cell research.

Benefits expected from these arrangements within the proposed facility: Moving basic research to clinical development is dependent upon close interactions between basic and clinical researchers. The UCLA research enterprise is organized to promote such an exchange. The

proposed faculty who will occupy the Facility were chosen based on the strength of their scientific programs, their proven leadership ability to drive new initiatives, and their ability to cross the boundaries between different research areas. By locating active clinical researchers with the translational and basic investigators, more fundamental findings will be brought into preclinical research and subsequent clinical study more rapidly. In addition, the combined expertise of basic and clinical researchers is of tremendous value in the evaluation of various clinical protocols allowing for a relatively rapid progression from basic and translational studies to FDA IND filing.

A distinctive feature of UCLA is that the Life Sciences Departments within the College of Letters and Science, and the Schools of Dentistry, Engineering, Public Health and Medicine are located on UCLA's campus in close proximity and faculty members from different disciplines have a tradition of teaching, research, and translational interactions and have worked together to establish multidisciplinary centers that include the Jonsson Comprehensive Cancer Center (JCCC), the Molecular Biology Institute, and The California Nanosystems Institute (Figure 1). This tradition is reflected in the BSCRC, whose leadership and membership are drawn from multiple schools and divisions.

The central location of the Facility, in close proximity to all of the schools and institutes, also allows faculty easy access to their colleagues in the newly completed (2007) Biomedical Sciences Research Building that includes the BSCRC administrative offices and at least 12 laboratories working on stem cell research, including four CIRM sponsored investigators. The Facility is also located adjacent to UCLA's Center for the Health Sciences (CHS) and includes many additional stem cell research laboratories. The Factor Building in CHS houses the hESC stem cell bank and derivation core laboratories as well as the CIRM sponsored SRL described in Section 4.

The tradition of collaboration and close proximity to other stem cell researchers resulted in a number of novel interactions and will foster innovation in research capabilities. For example, faculty, students, and technical staff in materials science/School of Engineering work with basic and translational stem cell scientists to generate new systems for hESC culture and these scientists in collaboration with Caltech are developing microfluidics devices for small volume culturing and handling of stem cells. In addition, engineers and biologists are developing floating electrode optoelectronic tweezers (FEOET) to grow and manipulate hESCs. As described in Section 3A, the Facility will include a bioengineering core that will provide a central location to foster this work. Most of the faculty in the Facility as well as those with laboratories in adjacent campus locales are already engaged in on-going productive collaborations. For example, the expertise for manipulating hESC, epigenetics, and reprogramming are all focused on the common challenge to define elements that maintain pluripotency and lineage specific differentiation. This information will ultimately be of relevance to the reprogramming of somatic cells to ESC which in turn holds great potential for customized transplantation therapy.

There are no physical barriers between laboratories in the Facility; instead, the 'open bay' design of the work space will ensure numerous opportunities for interactions between laboratories as well as provide the flexibility to support the most progressive current and future research paradigms. In addition to ensuring rapid, "real time" dissemination of information between groups, the BSCRC instituted formal venues for information exchange. For example, a stem cell 'research in progress' meeting attended by the majority of stem cell laboratories is held every Friday. In addition, JCCC and BSCRC faculty present their data during a weekly seminar series.

(2) PROVIDING CRITICAL AND UNIQUE CORE SERVICES & SHARED RESOURCES TO STEM CELL SCIENTISTS

The central campus location of the proposed Facility based core resources will ensure ready access to not only Institute stem cell investigators but also to stem cell investigators in adjacent related buildings. The Core resources provide individual faculty with access to highly specialized, cutting-edge equipment that could not be duplicated by any individual due to prohibitive cost and will provide a cost savings to CIRM grantees. The proposed Cores allow stem cell investigators with rapid access to key cutting-edge technologies that will accelerate stem cell science. The Facility Cores will be complimentary and interactive with existing Cores providing benefits to hESC and iPS investigators as outlined below.

The Core resources will be supervised by faculty with expertise in the technology and run by technical staff. Each Core Director is an expert in the area and will work to advance the available technology. The Core Directors will be responsible for managing demand and determining use. Faculty Core Supervisors will report to the Core Operating Committee, chaired by Dr. Witte. The Core Operating Committee will be responsible for addressing increase in demands in order to prioritize access to the Cores for the most important research.

The Advanced & Vital Microscopy Core: will include state-of-the-art microscopes, such as a 2 Photon Confocal microscope. This core will have the capacity to perform physiological measurements on live/differentiated tissue. Almost all of the investigators on at least three floors of the LSRB as well other stem cell investigators on campus will use this core. The critical core with specialized vital microscopy techniques will be applied to many studies including, cell migration for immune system cells and cardiovascular studies.

Advanced Mouse Genetics Core: This innovative core will apply the VelociGene technology developed by Regeneron to genetically modify mouse ES cells with high efficiency. Again, this core resource will be unique to the CIRM Institute and will be of vital importance to campus and Caltech investigators developing mouse stem cell models. The advanced mouse genetic technologies present a dramatic decrease in the time necessary to create and evaluate mutant strains of mice thus saving money and accelerating research results. Thus, this new core provides state of the art transgenic technology, allowing the generation of transgenic or knockout animals in a fraction of the time using traditional methods.

Approximately 652 asf of Facility vivarium laboratory/procedure space is allocated exclusively to this core. Cutting edge Laser assisted cell puncture of embryos as well as other general procedures will be performed in this area. Additional vivarium space (1514 asf) is also available in the general LSRB Vivarium.

Bioengineering Core: UCLA will take cell separation and manipulation to the leading edge by establishing a core to focus our considerable expertise in bioengineering on stem cell biology. The core will support, for example, the synthesis of new surfaces for growing hESC, the development of new cell separation technologies, including the use of microfluidics and the development of optical tweezers to micromanipulate cells.

The microfluidics component of the Bioengineering Core will enable the movement of small amounts of fluid and cells to facilitate hESC cell separation, merging and mixing, and culturing in small volumes. These small volume techniques are being applied in collaboration with CalTech in the DNA Encoded Antibody Libraries (DEAL) approach for ultrasensitive detection of protein, DNA, RNA, and single cell analysis. In complementary studies, we are developing floating electrode optoelectronic tweezers (FEOET) to move cells and microliter droplets on a

freely configurable platform that uses very low power to grow and manipulate hESCs. These biophysical approaches are dependent on the Bioengineering core.

Little is known about the role for mitochondria in the control of quiescence, survival, self-renewal, or differentiation in hESC despite the fact that alterations in the maternally-encoded mitochondrial genome will likely affect hESC function and potential for long-term therapy. In collaboration with D. Wallace (CIRM Investigator Grant) of the UCI Stem Cell Institute, we are defining the sequence for the mitochondrial genome of hESCs with desirable nuclear genomic and epigenomic qualities to assist in the selection of lines for translational and therapeutic usage.

This new methodology allows the simultaneous testing of external stimuli that effect growth and development of pluripotent cells for large scale testing. The innovative technology requires less physical space and materials as compared with the labor intensive, expensive (reagents), and equipment of the conventional technology. The microfluidics will ultimately result in a cost savings to CIRM and acceleration of scientific discovery.

Computational/Bioinformatics Core: Computational biology has become an essential part of all modern biological research. All of the proposed physical platform Cores will feed into this Core in order to categorize, analyze, and synthesize large scale data, e.g., terabytes. High-throughput comparative data from sequencing, expression arrays, tiling, mass spectrometry and imaging requires expert computational analysis as well as equipment to analyze genome-wide approaches that require microarray technologies (e.g., gene expression, ChIP-chip or MeDIP). Individual investigators cannot afford the efficient high speed collection, storage, retrieval, and manipulation of enormous data sets. This core will serve the needs of bioinformaticists, biologists, and clinician scientists by linking computer clusters in the service of Facility based research as well as other campus stem cell scientists. Thus, the Core will serve as the hub of all of the Facility Cores and provide an important site for collaboration on stem cell computational projects by numerous investigators involved in basic and discovery research in the Institute and other campus departments.

Microarray/CGH Core: The core will have broad capabilities in genome-wide array-based genetic and epigenetic analysis not currently available on campus, with highly specialized technical equipment that includes an Agilent Bioanalyzer 2100 (quantitative multiplex PCR), Agilent Microarray SureScan scanner (multipurpose DNA methylation, ChIP-chip, and aCGH microarray scanner), Nanodrop ND-1000 and ND-3300 probe quantifiers, and microarray hybrization ovens and large scale freezer capacity. Users will have access to two Solexa 1G sequencing systems, with an established Linux based computational infrastructure for massive parallel sequencing and analysis made available through a collaborative arrangement with the director of the UCLA JCCC DNA Microarray and Gene Expression Core Facility. A data storage system appropriate for these large scale datasets will be developed that intimately links with the Computational/Bioinformatics Core for data transfer and robust multi-parameter analysis. The Solexa sequencing systems present a critical cutting edge technology that is critical for quality control of stem cell and iPS materials that will eventually reach the GMP facility for therapeutic purposes in patients.

Vector Core: This Core will provide a variety of pre-made retroviral, lentiviral, and adenoviral vector stocks expressing standard marker genes to utilize in preliminary experiments, as well as a library of available vectors expressing a variety of mammalian genes and corresponding inhibitory sequences, such as RNAi. The Vector Core also helps design and produce custom viral vectors that contain a specific transgene of interest for individual researchers. This core

will be used extensively by immunology researchers attempting to transfer genes into hESC or HSC.

Vivarium: The Vivarium is crucial to our mission of evaluating new therapies and concepts in pathology through advanced mouse models of disease and cell transplantation. Campus vivaria are impacted resulting in considerable backlog for use and thus a deceleration in scientific research. The Facility Vivarium and dedicated procedure rooms will serve to address the campus backlog by providing rooms specifically to stem cell investigators who will have immediate access to designated space and adjacent mouse housing. The Facility vivarium and dedicated procedures rooms are particularly important for the success of the Advanced Mouse Genetics Core. The dedicated Vivarium will, for example, also provide a cost saving for stem cell research through dedicated and centralized cage washing, maintenance, and autoclave and though under the direct authority of the campus veterinarian, the Facility Vivarium will be operated by BSCRC personnel with a resulting anticipated cost savings from normal DLAM cost structures.

Interface of Facility Cores with Campus: It is important to note that UCLA receives ~$914M in extra-mural research funding and has thousands of laboratories across the campus. The proposed Facility will only include new Core resources rather than duplicate existing programs. The structure of this proposal, specifically the new and available Core resources, speaks to the highly collaborative UCLA research environment. Existing campus cores are essential for the success of our stem cell program and are all highly interactive with the program. There are many examples of shared Core resources in Section 4 that will be used by Facility investigators. For example, the Nude/SCID Mouse Core Facility and the Virology/BSL 3 Cores in the BSRB and CNSI will be used by Facility investigators who also have access to and use the ultra-clean fabrication facilities in Engineering and the PET/PET CT Imaging Facility in the Crump Institute could not be housed in one space. CIRM will see a cost savings from the lack of redundancy and better cost structure resulting from the management of the most critical facilities to achieve our mission. Most importantly, UCLA has expert faculty supervising the Cores and maintaining the most modern equipment and procedures.

(3) *FACILITATING THE RECRUITMENT AND DEVELOPMENT OF YOUNG BASIC SCIENTISTS AND PHYSICIAN SCIENTISTS WHO WILL PLAY IMPORTANT ROLES IN TRANSLATIONAL RESEARCH THROUGH THE DEPTH AND BREADTH OF THE PROPOSED PROGRAMS*

Young basic scientists bring with them great enthusiasm and novel approaches to science. These young investigators are very valuable, as they often provide the new ideas and initial preliminary studies that eventually develop into potential clinical approaches. As such, the Facility is designed to support the careers of these young investigators. The Facility will also serve to support developing young clinical faculty involved in translational research. Many of the physician scientists are members of clinical departments that have limited research space. We are committed to developing the careers of translational researchers and will assign 3-4 of them space in the Facility at any one time. There are several advantages to this plan: (1) young faculty will have immediate access to state of the art instrumentation and core facilities that will allow them to initiate work without the delay often encountered when just starting a laboratory, (2) they will be located in a dynamic environment (facilitated by the open-bay design of the labs) with other junior faculty, pre- and post-doctoral trainees, and senior investigators who are conducting basic and translational research, and (3) the senior faculty will provide career guidance as mentors to assigned junior faculty member including guidance about academic advancement as well as strategies for grants and publication. Together, providing career development for young basic and translational scientists offers an increased potential that novel ideas will translate into clinical trials.

(4) *SUPPORT CONTINUED CUTTING-EDGE COLLABORATIONS WITH CALTECH*

Our programs are enhanced by interactions with Caltech that include our highly collaborative UCLA-Caltech engineered immunity consortium that will express T cell receptor genes in hematopoietic and embryonic stem cells to produce improved cellular immunity to combat cancer and related diseases and the Caltech-UCLA Nanosystems Biology Cancer Center that is developing new ultrasensitive diagnostic and therapeutic technologies for stem cells. These projects and others will interact with our clinical research programs to conduct cell based clinical trials and evaluate applied stem cell therapies. Basic and translational scientists from these two institutions will gather within the Facility to share data and advance their collaborations. In addition, our colleagues at Caltech will have access to the Institute core facilities and laboratories to augment their studies.

(5) *SUPPORT OUR CIRM TRAINING GRANT AND STEM CELL EDUCATION PROGRAMS*

Trainees supported by the CIRM Training Grant will use the various core facilities in their individual projects. Exposure to, and participation in the cutting edge methodologies utilized in these cores will ensure that trainees become familiar with the most modern scientific tools and methods. In addition access to these facilities should increase the likelihood that significant and meaningful data will be produced, which will allow more rapid advancement of the trainees' scientific careers. Finally, the ability of this facility to help to recruit talented new faculty will undoubtedly influence the availability of faculty for didactic lectures relevant to stem cells. Together this will provide a more vibrant educational experience for our trainees.

Describe the changes in research program capabilities and capacity that will be achieved as a result of the project.

As described in this application and in the Part I application, a distinctive feature of UCLA is that the Life Sciences Departments within the College of Letters and Science, and the Schools of Dentistry, Engineering, Medicine and the UCLA Hospital are located in close proximity within a five minute walk on the same campus. Through a tradition of teaching and collaborative research, faculty from different disciplines have translational research interactions leading to the establishment of multidisciplinary centers that include the JCCC, the Molecular Biology Institute, and The California Nanosystems Institute. This tradition is reflected in the BSCRC, whose leadership and membership are drawn from multiple schools and departments.

The Facility will provide much needed flexible interactive space for the recruitment of new stem cell faculty and critical core resources not already available on campus. It will build upon our existing commitment to training the next generation of physician-scientists who will carry our laboratory advances to the clinic. The open-bay laboratory concept works within the existing UCLA collaborative culture by facilitating cross currents of intellectual and technical ideas and works to ensure career development. The design also provides for long term flexibility to keep up with the ever-changing scientific research environment.

The Core resources provide individual faculty with access to highly specialized, cutting-edge equipment that could not be duplicated by any individual due to prohibitive cost and will provide a cost savings to CIRM grantees. The proposed Cores allow stem cell investigators with rapid access to key cutting-edge technologies that will accelerate stem cell science. The Facility Cores will be complimentary and interactive with existing Cores providing benefits to hESC and iPS investigators as outlined below.

SECTION 3B: Need for the project. Explain why the selected project represents the best value for achieving the program goals.

The goal of our program is to facilitate cutting-edge interdisciplinary research in basic and translational stem cell sciences, to speed the advent of stem cell discoveries into the clinic. We intend to support novel stem cell-related core facilities and provide optimal space to junior, mid-career, and senior investigators with research interests in both basic and translational stem cell research. The Facility will serve as a melting pot for creative scientific work by including research in a range of scientific areas such as neural, blood, muscle/cardio, epithelial, and cancer stem cells, as well as cutting edge work in immunity, such as HIV and melanoma, cell fate decisions, and iPS. These basic and translational scientists will be working side-by-side with engineers and clinicians in order to achieve our goal of bringing laboratory discoveries to the clinic for the treatment of disease.

UCLA has track record of translating basic laboratory discoveries to the clinic such as the first targeted cancer therapies, Gleevec (leukemia) and Herceptin (breast cancer). The same successful model that was utilized to support the development of drugs such as Gleevec and Herceptin was used in creating this proposal with respect to the specific X, Y, and Z components. In keeping with the Proposition 71 mandate and our own track record of strength in this area, the Institute will facilitate the rapid introduction of scientific findings to the clinic in order to decrease health costs and maximize benefits to patients.

Core facilities supporting novel bioengineering approaches, cell differentiation, and advanced mouse genetics will leverage and facilitate cutting edge experimental approaches. This combination of attributes will bring the most powerful scientific combination to bear on the stem cell field, and provide mentoring opportunities to facilitate career advancement of junior investigators. As such, centrally located contiguous space for the stem cell program is essential.

The Life Sciences Replacement Building (LSRB), currently under construction and scheduled for completion in May 2010, will include the CIRM Institute and represents the lowest risk and best value in cost, location, design, and ability to support our cutting edge stem cell programs. This structure provides an excellent amount of space and an appropriate central location near other programs and facilities critical to stem cell research, such as the GMP suite and hESC core bank. The cost of outfitting this space would be much less than refurbishing equivalent square footage elsewhere on campus. Aside from costs to renovate existing space, empty contiguous laboratory space such as described in this project is not otherwise available, and relocation procedures to displace existing faculty to accommodate our needs would be costly and inefficient. Secondly, space at UCLA is traditionally allocated along departmental lines. Consequently logistics to displace individuals in currently occupied space would have severe consequences for the individual department or departments being relocated. Close interaction of faculty with similar yet diverse research interests, including basic and translational studies, such as that proposed here, provides additional value as it will spark new collaborative efforts that will prove beneficial for the health of Californians.

Include a clear and concise narrative description of the project's program-related objectives.

Our chief goal is to provide an environment that will foster creative collaborations between basic and translational stem cell scientists, in order to speed the translation of basic discoveries to the clinic. We will accomplish this by providing new open-bay lab design with cutting edge scientific core facilities that will encourage and support the development of novel technologies and therapies by incorporating new concepts in bioengineering, cell imaging and manipulation,

and mouse genetics into a single facility. The co-location of junior, mid-career, and senior investigators will provide a vibrant academic environment with potential for innovative mentoring approaches. Basic scientists will work closely together with clinician scientists on a daily basis, which should help to rapidly translate basic stem cell-related discoveries into clinical trials.

Identify alternative means that were considered to meet the program objectives, such as leasing space, or collaborating with other institutions for access to needed facilities.
We considered several options, such as leasing off campus space or collaborations with other institutions keeping in mind UCLA's commitment to this Institute for many years to come. Leasing off campus space posed significant problems, as there is no effective nearby space suitable for laboratory use (see below). We remain committed to collaborations with several local Los Angeles institutions, including Caltech and Children's Hospital Los Angeles, however locating the stem cell program physically distant from UCLA was deemed disadvantageous and undesirable as it would undermine the collaborative effort with clinical and engineering faculty that is promoted by the compact nature of our urban campus.

Explain the reasons for proposing this particular project (new building or renovation) and explain why the alternatives were rejected in favor of the proposed project.
We are proposing to outfit a contiguous floor in a new building located in close proximity to the UCLA Medical center, the hESC core bank and derivation laboratory, the GMP suite, the CIRM sponsored GTP-SRL facility, and the main science quad on the UCLA campus. The close proximity of stem cell researchers with these other important resources is highly desirable. Los Angeles is a large city with many resources. However several other scenarios were explored, including leasing space and collaborative interaction with neighboring academic institutions. UCLA is located in a predominantly residential area, thus leasing laboratory space near campus is not possible. We feel that proximity to the main campus provides significant advantages for stem cell science and particularly, the Institute, considering the many other critical core facilities-programs as well as the outstanding medical center located within a block of the proposed Facility. UCLA has a long tradition of collaboration with other institutions, particularly Caltech. UCLA-Caltech scientific collaborations were seen as better stimulated through the use of our larger facilities as outlined in the description below of Shared Core Resources such as the CIRM sponsored SRL. Furthermore, the proximity of the current project to UCLA Medical Center, ranked the Best in the West for 18 consecutive years, was deemed highly advantageous for our program, which focuses on translational and clinical stem cell studies.

SECTION 3C: Project Description.
The Facility will be created within the LSRB. The LSRB is a 105,265 asf (176,590 gsf) research laboratory building that is currently under construction on the UCLA campus. It consists of five floors of research laboratories and a basement level accommodating a vivarium. LSRB is located at the intersection of Charles E. Young Drive South and Manning Drive, directly across the street from the recently completed Biomedical Sciences Research Building that includes the BSCRC Administrative offices as well as at least 12 stem cell investigators. The project is funded with State funds, and campus debt financing and campus non-State funds. A Notice to Proceed was issued on June 18, 2007, with completion of construction scheduled in May 2010.

The UCLA CIRM Institute is assigned dedicated space in the building representing 19,253 asf (30,920 gsf), and includes the entire third floor for its research laboratories, core laboratories, offices and administrative support, and a portion of the vivarium that includes barrier holding rooms and procedure rooms within the barrier mouse facility. In addition, the Institute would

share a portion of building-wide administrative support space located on the first floor that includes a large conference room, and central copy, mail, and dock and building management offices; and the share a portion of the vivarium that includes receiving, decontamination, quarantine, cage wash, gowning, locker, break room and storage facilities. In total, the Institute would utilize 21,114 asf (34,587 gsf) in LSRB. The following table summarizes the dedicated and shared space allocations in the building.

Space Type	**ASF**	**GSF**
Dedicated Space:		
Research Laboratory (PI)	3,955	
Research Laboratory (Shared)	1,973	
Research Laboratory Support (PI & Shared)	5,662	
Core Laboratory	3,436	
Offices (PI)	1,060	
Offices (Other)	1,825	
Administration & Support	690	
Vivarium	652	
Subtotal	**19,253**	**30,920**
Shared Building Support:		
Administration & Support	347	
Vivarium	1,514	
Total	**21,114**	**34,587**
Building Total	**105,265**	**176,590**
CIRM Institute Share of Building	**20.1%**	

CIRM funding will support the construction of the 21,114 asf (34,587 gsf) of the laboratory, vivarium and shared support facilities identified in the table above. The Life Sciences Replacement Building, designed by architect Jon C. Jackson of the award winning firm Bohlin Cywinski Jackson, accommodates academic research programs of the Life Sciences Division of the College of Letters and Science, and includes the designated Facility on the third floor. The laboratories on the third floor, as well as those in the entire building, were planned to facilitate collaboration and leading-edge research initiatives that are considered ideal for stem cell research. An analysis of the design of this floor has shown that it will meet the requirements of stem cell research without modification. The building will be used exclusively for research and does not contain classroom or teaching laboratories.

LSRB has been designed with large, open-bay laboratory spaces to allow multiple scientists to work in a shared laboratory environment, with the main laboratory spaces uninterrupted by doors and walls. While the building was developed to support investigation in the biological and physiological sciences – particularly for the departments of Molecular, Cell and Developmental Biology (MCDB), Physiological Science, and Ecology and Evolutionary Biology - the building's modular and flexible laboratory spaces are applicable to a host of scientific research, including Regenerative Medicine. Flexibility in the open laboratory space is supplemented by movable and vertically adjustable casework as well as distribution of laboratory utilities from overhead carriers. The modular nature of the laboratories permit the space assigned to individual

investigators to increase or decrease (flexible space) according to need so that the research laboratory environment can respond to changes in technology, research missions and personnel over the life of the building.

LSRB's scientific support space has been provided and configured to facilitate and enhance these changing requirements. Support spaces are part of the modular lab planning grid, and consist of fume hood alcoves, and procedure, equipment, glass wash and controlled environmental rooms. Dry laboratory space has also been provided to support programs with computational requirements. The basement-level vivarium includes a barrier mouse facility, as well as holding rooms for rodents, birds and several aquatic species. Procedure and surgery rooms are also available inside the vivarium.

LSRB's offices have been designed on the same module as the laboratories with a standard size for each. Standardized office design provides flexibility in assignment, ease of relocation as research projects change, and enhanced potential for interaction and collaboration. Private offices will be assigned to faculty. Administrative support space on each of the floors, including the third floor, includes two conference rooms and a break room

Identify the major program elements and the associated spaces. Discuss the types of space to be provided and their role in supporting the facilities needs of the program. Identify how the amount of space allocated to each functional category of space (i.e. research laboratory, laboratory support, office, etc) was determined and explain how the amount of space allocated represents an economical solution for the intended use.
As noted above, the CIRM Institute will include X, Y, and Z components over 9 major program areas integrated across basic, translational, and clinical research with unique Core resources that were chosen based on their innovative application to stem cell science and successful track record to date (Figure 2). The research programs include: (i) *Embryonic Stem Cell (ESC) Fate Decisions,*(ii) *Neural Stem Cells* (including autism and related disorders, stroke, ALS, spinal cord repair, and demyelinating diseases), (iii) *Epithelial Cell Biology*, (iv) *Hematopoietic Stem Cells,* , (v) *Cancer Stem Cells,* (vi) *Generation of HIV Resistant Stem Cells*, (vii) *Development of Cellular Vaccines*, (viii) *Engineered Immunity Consortium*, and (ix) *Cardiovascular Stem Cell/Progenitor Studies*. The Facility also includes eight of our **10 UCLA CIRM grantees** directing laboratories or Core services.

In order to maximize collaborative cutting-edge research, the Institute will include ~21K asf of open-bay laboratories that will facilitate communication between scientists and staff, shared laboratory support space, innovative core resources not found elsewhere on campus, and faculty office space that will serve senior, mid-career, and newly recruited scientists, engineers, and clinicians along with dedicated and shared vivarium facilities and conference room.

Facility space is assigned by a faculty committee under the direction of Dr. Witte, and co-directors Utpal Banerjee, PhD, (MCDB Chair) and Judith Gasson, PhD (JCCC Director), per the plan outlined in Section 6C. The committee, representative of the needs of the BSCRC and campus research, prepared a plan which was reviewed by the BSCRC membership (represented by faculty from the Schools of Medicine, Engineering, Public Health, Dentistry, and the Life Sciences). The input from various stakeholders was evaluated and used to formulate a plan that maximizes the value of the current proposal. The plan emphasized flexible laboratory space with a high priority for the strongest and advanced stem cell programs in the X, Y, and Z components while recognizing the need to support young investigators, particularly physician-scientists, with new and innovative ideas as well as unique core facilities that would provide cutting-edge resources not found elsewhere to stem cell scientists.

Identify any special requirements for building utilities, site development or other characteristics that would impact the budget.

There are no special requirements for building utilities, site development or other characteristics that would impact the budget. A separate site preparation project, funded with campus resources prior to the receipt of State funds for the LSRB project, was completed prior to the commencement of construction of LSRB. That campus-funded project, representing an expenditure of approximately $3.3M, demolished an existing structure on the site, provided hazardous materials abatement, relocated site utilities, removed landscape elements and provided preliminary site grading for the LSRB project.

Explain any complexity of staging occupants, relocation or reassignment of space with other entities within the organization.

No staging, relocation or space reassignments are required to construct this project. Occupants of the structure that was demolished to prepare the site for the construction of LSRB were relocated to other campus facilities under a separate campus-funded project prior to the commencement of construction.

Explain any other unusual circumstances, conditions, or scope elements that would impact the budget of the project.

There are no unusual circumstances, conditions or scope elements that would impact the budget of the project. The LSRB project was approved by the Regents of the University of California in November 2005, the construction contract was authorized for award by the University of California Office of the President in May 2007, and construction is currently underway (Figure 3). The approved total project budget of $155,378,000 to construct LSRB is fully reflective of market conditions at the time of the award of bid in May 2007.

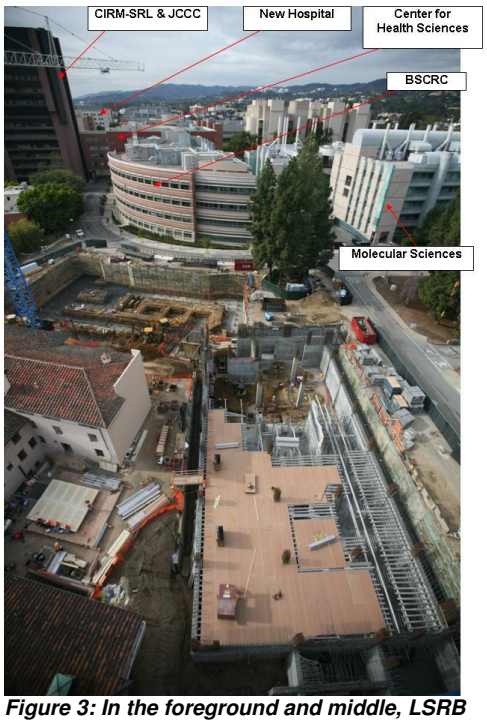

Figure 3: In the foreground and middle, LSRB under construction, January 2008 with adjacent building

Discuss the status of the environmental review, and whether or not the review has identified projects elements needed to mitigate impacts.

UCLA completed a Focused Tiered Environmental Impact Report (Final EIR) dated August 2005, subject to the requirements of the California Environmental Quality Act (CEQA), that was certified by the Regents of the University of California in September 2005. The analysis contained in the Final EIR determined that applicable mitigation measures, programs, practices and procedures adopted under the campus' 2002 Long Range Development Plan (LRDP) would reduce impacts to a less-than-significant level in all areas except for short-term and unavoidable construction traffic and noise impacts. The costs of applicable mitigation measures are fully reflected in the approved total cost for the LSRB project.

Explain how any future program expansion would be accommodated.

As previously described, LSRB's modular/flexible laboratories have been designed to allow the research environment to respond to changes in research mission and personnel over the life of the facility. In addition, research laboratory, laboratory support and office space assigned to the

CIRM Institute on the third floor have been allocated to support the recruitment of additional faculty, as described in greater detail below.

New Faculty Recruitment

As described above, the UCLA BSCRC plans to recruit an additional 6 stem cell researchers to the campus, and space has been allocated for 3 of those faculty as well as providing flexible space for investigators with important stem cell projects. Our intent is that one of these new recruits will be working at the preclinical/clinical interface in order to bring new therapeutics online. In particular, we are seeking an individual who will collaborate with basic science investigators studying reprogramming, differentiation, and the intricacies of different hESC lines to generate patient-specific stem cells that, in culture, could be turned into the type of cell or tissue needed to cure the patient's disease or injury and transplanted back into the patient's body.

In addition to these positions, we anticipate that additional stem cell researchers will be recruited to UCLA by our departments with interests in this area, including the Departments of Pathology and Laboratory Medicine and MCDB that pledged at least one position each for stem cell recruitment.

Faculty Development

Some of the individuals with the most promise in the clinical research area are our own UCLA trained physician and clinical problem oriented researchers who are initiating their independent careers as well as those newly recruited from other institutions. In order to ensure their success, we are allocating space for 3-4 junior faculty in the Facility. This plan will allow them to work in association with established investigators who will serve as their mentors.

As noted in the translational research component (Element Y), some of these new researchers will be involved in basic research. However, we have identified several new assistant professors, many of whom are physician scientists, who exemplify the type of individual who will occupy space in the Facility. For example, an NIH RO1 funded investigator is playing a central role in attempts to engineer immunity to HIV. Other junior faculty such as a urologist with an interest in prostate cancer stem cells and a dermatologist working on the transformation of stem cells to produce melanoma and a neonatologist who studies the development of the vascular system are typical of the young faculty type who may have important projects that will be synergistic with the goals of the proposed Institute. Some of the possible candidates are CIRM UCLA training grant (TI-00005) clinical fellows.

As described in the Part 1 application, other UCLA investigators such as a urological surgeon using mesenchymal stem cells to generate smooth muscle for bladder repair, a hepatologist studying stem cells for treatment of diabetes, as well as investigators examining bone marrow and lung tissue derived epithelial stem cells for airway repair; identification of cells and molecules in stem cell niches that direct stem cell self-renewal, and brain tumor stem cells in order to develop efficient therapies, illustrate that UCLA continues to generate a large group of young researchers whose work will advance stem cell research and who will benefit from being located in the Facility.

Taken together, the linkage of basic and translational research at UCLA, new faculty hires, and our mentoring of translational scientists are all expected to be important factors in developing basic research discoveries to the clinic.

Stem Cell Training Programs

The Facility will also support our stem cell training programs described above. As noted, UCLA offers lower division, upper division, and graduate level courses in stem cell biology and regenerative medicine. The latter course was developed for fellows supported by the CIRM training grant (TI-00005) and provides a forum for the presentation and discussion of clinical stem cell research.

New personnel are recruited to join the many of the labs represented in the BSCRC and the Facility. The labs have on-going training and teaching programs to initiate scientists from a broad array of disciplines to the state-of-the-art stem cell sciences. The BSCRC and by extension, the Facility, connection to undergraduates and graduate students ensures a supply of well-educated young scientists capable of filling the job needs generated by the CIRM investment as new companies arise in California from this investment.

SECTION 3D: The space layout should clearly indicate the type of spaces to be constructed consistent with the program justification. Indicate how the project will expand capacity and capabilities for stem cell research by indicating the number of investigators to be accommodated, how many are existing and how many are new investigators.

Investigators: In order to provide senior leadership, BSCRC director **O. Witte** and co-director U. Banerjee will locate their stem cell activities in the Facility as well as other investigators noted in the table. The re-location will facilitate interactions with additional CIRM funded stem cell researchers **I. Chen, W. Lowry**, and **H. Mikkola**, whose laboratories are across the street from the Facility and other campus stem cell investigators discussed in the Program Narrative. The Facility will also provide much needed space for the career development of young clinical faculty and the recruitment of three new stem cell faculty.

Please see Figure 2 for the Facility floor plan including individual laboratories and Core resources.

Investigators	**Research Area**	**ASF: Lab & Office**
U. Banerjee	Hematopoiesis and neurobiology	1572
G. Fan	Epigenetics and cell reprogramming	1210
Z. Galic	T cell generation & hESC	659
H. Kornblum	Pediatric neurology and cancer	1224
R. MacLellan	Cardio cell cycle regulation	864
A. Ribas	Cancer & vaccines	775
O. Witte	Prostate stem cells, leukemia, & hESC	1400
J. Zack	HIV & hematopoiesis	1141
(3) TBN New Faculty		2459
(4) TBN Faculty Development		2215
Total		**13,519**

Cores: The Facility, upon completion**,** will include new critical core laboratories (3,436 asf) that will provide technical and developmental support for the stem cell programs and complement existing services, e.g., micro-fabrication, small molecule screening, hESC derivation and banking, and FDA compliant GMP and CIRM funded SRL GTP suites directly adjacent to the Facility.

Core Resources	**Director**	**ASF**
Bio-informatics/Computation	M. Pellegrini	1060
Advanced Vital Microscopy	U. Banerjee/**W. Lowry**	375
Advanced Mouse Genetics	H. Wu/**K. Plath**	565
Bioengineering	B. Dunn/HR Tseng	470
Microarray – CGH	**M. Teitell/S. Kurdistani**	470
Vector	**N. Kasahara**	893
Vivarium		652
TOTAL		4,485

Any secondary effects, such as existing space being freed-up to meet additional stem cell research needs, should be identified.

Secondary effects resulting from relocation of program faculty to the proposed Facility are likely to be advantageous for stem cell science at UCLA. As individuals relocate to the new facility and vacate their current laboratory space, their original labs will become available for new faculty with a focus in stem cell biology. Currently several departments have active faculty searches and are considering stem cell scientists, for example, at the time of this proposal, the Departments of Pathology, MCDB, and Microbiology, Immunology and Molecular Genetics (MIMG) have active faculty searches. The departments have a strong record of hiring new faculty with interests in stem cell science, and will have significant space opening due to relocation of some of their faculty (Banerjee, Galic, & Zack), to the new facility. Similarly current faculty with interests in stem cells may be able to expand into this newly available existing space. We also feel that completion of the program as requested will be a powerful recruitment tool for new faculty, who will be attracted to UCLA due to the existence of the exciting new core facilities being proposed.

SECTION 3E: Identify elements of the project that relate to goals associated with sustainability. Provide preliminary Green Building LEED score or equivalent assessment.

LSRB is UCLA's first contemporary wet laboratory building that has been designed to achieve high performance energy efficiency standards under the Laboratory for the 21st Century (LABS 21) and UC-Equivalent New Construction green building programs. The design incorporates many sustainable features focused on reducing the high energy and water consumption needs due to intensive ventilation requirements and other health and safety concerns that are typical for these types of facilities. For example, to improve operating efficiency, the building's mechanical system incorporates variable volume controls and fan drives for both hood exhaust and supply air systems, so that air volumes can be matched to the actual demand generated by hood sash position. In addition, sun shades on the building's windows have been designed to reduce heat gain and glare while optimizing the use of natural lighting to illuminate laboratory spaces (See Attachment 2).

The ultimate number of green building/LABS 21 points achievable by the LSRB is still evolving, and the preliminary score sheet (See Attachment 2) shows that the 40 points currently assigned to the building design is within very close reach of achieving a "silver" rating. Consistent with the UC Policy on Sustainable Practices (*www.ucop.edu/facil/sustain/documents/policy_sustain_prac.pdf*), the project will strive to achieve a silver rating (41 points of 85 possible), and will comfortably achieve a minimum "certified" rating (32 points of 85 possible). (See Attachment 3)

Indicate the proposed budget and source of funding for items to be purchased
The Institute funding is provided by commitments from Chancellor Gene Block and through a gift to the UCLA BSCRC from the Broad Family Foundation.

SECTION 3F: Itemize all Group 2 Equipment costing over $5000 needed to make the Facility operational upon occupancy.
In compliance with this RFA, UCLA is committed to supporting CIRM's objective of encouraging investments in the Institute through matching and leverage funds. Our 20% matching funds represent $5,929,255 of Group 2 equipment. This equipment will be funded by the UCLA Chancellor and gift funds provided to support the BSCRC in 2007 by the Broad Family Foundation.

Our leverage funds total $6,258,949 and include the amount spent to date on the main project, the cost to design the additional floor to be assigned to the UCLA CIRM Institute, and the amount to cover the proportional share of site preparation work that preceded construction of LSRB. It also includes a total of $3,492,500 for additional Group 2 equipment in the amount that is necessary to make the laboratories fully operational, including $1,913,389 of equipment purchased from 8/24/07 to date, and $1,579,111 of match in addition to the 20% requirement. Further, UCLA has identified $768,300 in existing Group 2 equipment that will be relocated to the Facility in support of stem cell research. This value is not reflected in the project budget, but represents another level of commitment that UCLA has to this project's long term success (See Attachment 4).

SECTION 3G: Identify project elements that are innovative in design or function.
As noted above, the design of the building embodies a new approach to laboratory layout that acknowledges the importance of communication and collaboration in scientific discovery through the use of open-bay modular construction. This building characteristic avoids the isolated approach to laboratory design that was common during the past seventy years. Other design elements that are considered innovative in the LSRB project involve the high degree of natural light that is brought deep into the interior of the building on each of the laboratory floors. The availability of natural light and views to exterior of the building help to keep the users oriented, and provides them with a clear sense of the building's organization at all times, which in turn fosters a psychological sense of safety and comfort. This practice has become one of the point categories recognized by LEED.

In addition to the provision of natural light, the design of the building's mechanical system incorporates variable volume controls and fan drives for both hood exhaust and supply air systems, so that air volumes can be matched to the actual demand generated by hood sash position. The sun shades on the building's windows have been designed to reduce heat gain and glare while optimizing the use of natural light to illuminate laboratory spaces.

The Core resources discussed above include technology centers not found on other campuses such as the Advanced Mouse Genetics and Bioengineering/Microfluidics resources. These specific Cores and the others outlined in this application will interface with other campus resources such as the GMP facility (including the largest gene medicine program in the world with 5% of patient/subjects worldwide) and the CIRM sponsored GTP suite. The Core technologies will enable stem cell investigators to perform advanced computational analysis of stem cell gene expression and monitor genetic changes in stem cells by CGH, SKY, and Solexa technologies, as well as the Vector Core, crucial for the preparation of technologies to modify stem cell preparations for pre-clinical and eventually clinical testing.

SECTION 4 SHARED FACILITIES:

Provide a narrative that explains how current and proposed facilities are to be shared and indicate how this sharing will result in cost savings to CIRM. Shared facilities may include existing facilities such as animal facilities and core laboratories that are used in stem cell research programs.

As stated in other sections, the UCLA CIRM Institute was custom-designed to facilitate collaborative research while maximizing the opportunity for synergistic knowledge transfer and both formal and informal mentorship opportunities between junior and senior faculty. In addition to the Institute's benefit to stem cell research, there are also anticipated cost benefits and savings to CIRM and thus California taxpayers. The technical consolidation resulting from the establishment of the innovative scientific Cores will benefit the Institute and ultimately CIRM through economies of scale. Our proposal avoids the redundant use of capital resources within these Cores and through joint sharing of common personnel, especially the consolidation of lab management personnel. Thus the plan enables the amortization of scientific costs across more scientists. As a result of centralizing functions, such as joint material storage, there will be a small oversight function necessary to support the Institute research efforts.

The proposed technology in the CIRM Institute with will also enable cost savings. For example, the vivarium will achieve costs savings as a result of a state-of-the-art, centralized, highly automated cage washing capability. Additionally, there will be centralized maintenance of the vivarium's infrastructure including an autoclave. Though under the direct authority of the campus veterinarian, the Facility Vivarium will be operated by BSCRC personnel resulting in an anticipated cost savings from the normal DLAM cost structures.

Another example of anticipated cost savings comes from the establishment of a Bioinformatics core. The establishment of robust technical infrastructure support such as a Stem Cell Server will create a centralized capability for large scale (terabytes) data collection (e.g., from all Cores and labs), storage, retrieval, and analysis, will increase the bandwidth for all users of the Facility that would be far more costly if not co-located or centrally managed.

Another cost savings to CIRM will be the downstream effect on allowable costs for future CIRM research grants in accordance with Proposition 71 and CIRM Grants Administration Policies where costs already provided by a CIRM facilities grant are not allowable costs in a CIRM research grant. By funding the Facility, upon its completion, UCLA will receive an abated amount of Allowable Facilities Costs that would be associated with future CIRM research grants.

Proposed Core Resources and Vivarium

BSCRC Director **Witte** will have overall responsibility for the above indicated proposed Facility Core resources. Day to day operations will be the purview of faculty assigned to direct each core. Non-academic staff will be hired for operation, and they, along with the faculty supervisor, will develop operating procedures. In particular, core directors will ensure that laboratory access is limited to authorized UCLA and Caltech scientists.

UCLA has a track record in the operation of research cores. The JCCC operates numerous core laboratories that include tissue procurement and storage, flow cytometry, small molecule screening, and preparation of vectors. Many of these cores, e.g., flow cytometry, have been well established for over a decade and operate without incurring deficits. The BSCRC will follow the JCCC model and establish faculty oversight committees that will work with the director of each core to formulate operating policy.

Current Shared Facilities

These cores are located in buildings in close proximity to the Facility and their operation and oversight is already under the purview of the JCCC and BSCRC. BSCRC researchers will have open access to them.

hESC GMP laboratory: The JCCC's GMP suite is located in the Factor Building, and it includes the hESC derivation and banking laboratories. In addition to expanding and banking hESC lines that will be developed in the derivation laboratory, both federally approved and non-federally approved hESC lines are stored in the bank. These materials are a source of cells for both the GTP and the multi-user laboratory, thus guaranteeing that work in these areas will proceed with the highest quality materials. Access to the GMP area is highly restricted to individuals who have competed hESC as well as GMP training courses and who have an approved IRB/ESCRO protocol that necessitates work under GMP conditions. SRL personnel will be trained in all aspects of GTP and GMP procedures, and this in turn will allow the seamless translation of hESC for clinical use. Various campus medical research groups, including Ribas**,** already make use of the GMP suite for the preparation of dendritic cells for injection in melanoma and brain tumor patients.

*CIRM Sha*red *Research Laboratory including the hESC Good Tissue Practices (GTP) Laboratory*: A major UCLA goal is to translate hESC advances to the bedside as rapidly as possible, and meeting it will necessitate that facilities be available in which clinical/translational protocols can be developed using hESCs manipulated under stringent conditions. The CIRM funded hESC SRL GTP suite will meet this need, and the expectation is that it will be used to translate insights generated in the multi-user laboratories to the clinic. Distinct areas within the GTP suite will be dedicated to expansion, storage, and experimental manipulation of hESCs. The hESC GTP core will be a source of hESC for researchers in the multi-user laboratories. Access to this area will only be granted to individuals who have completed a formal hESC and GMP training courses. Finally, office space for laboratory personnel, with computers linked to the SRL intranet and the internet will be included within the GTP facility.

hESC Core Bank: This core facility, on the same floor as the SRL, has served as an invaluable source for highest quality hESC and iPS lines. The core has signed agreements with institutions worldwide to guarantee the import of existing cell lines. The lab then initiates cultures of various lines as needed and maintains these lines in undifferentiated conditions for distribution to qualified users. **Zack**, a CIRM grantee, heads the hESC Core Bank which, in addition to propagating, storing, and distributing hESC lines, performs basic analysis of pluripotency and karyotyping. Multiple investigators, including, Kornblum**, Kurdistani, Lowry**, **Plath, and Witte**, have obtained materials from this core.

hESC Derivation Laboratory: This core facility, housed within the GMP suite on the same floor as the SRL, allows for the generation of new hESC lines in collaboration with the UCLA IVF program. The Derivation Core is fully equipped with micromanipulators, incubators, and dedicated staff, with a goal of deriving 10-20 new hESC lines per year at full operating capacity. Donated, fertilized ova are developed *in vitro* to the blastocyst stage and hESC derived in a dedicated suite within the GMP-certified hESC Core Bank headed by **Zack**. Newly derived hESC lines will be banked within the hESC Core Bank following assessments of pluripotency and genome quality. Many investigators will take advantage of this core to generate hESC lines from patients with particular diseases of interest so that in vitro models of human diseases can be studied. **Fan, Witte,** Kornblum**,** and others all plan to model disease states using lines generated by this core facility.

Cytogenetics Laboratory: Long-term culturing of hESCs in suboptimal in vitro conditions can induce genome instability that results in aneuploidy and translocations. As a first assessment on genome integrity hESCs are metaphase-spread karyotyped in the Cytogenetics Laboratory. Cells passing this initial screen are then assessed by aCGH for CNVs and monitored over culture time to assure genome stability for basic investigative and therapeutic utilization.

Flow Cytometry Cores: The JCCC Flow Cytometry Core houses 2 multi-color cell sorters and 4 cell analyzers. For advanced analytic and cell sorting capabilities, the BSCRC Flow Cytometry Core is housed in the Biomedical Sciences Replacement Building across the street from the Facility and contains an additional FACSAria sorter and LSR II analyzer.

Gene Expression Core: UCLA has a world-class microarray facility already on campus run by Nelson. This core provides hybridization of Affymetrix GeneChips, data management and storage of Affymetrix GeneChip experiments, and prefabricated and custom-printed DNA microarrays.

Mass Spectrometry Core: supported by the JCCC, provides the ability to identify interacting partners, which in turn provides one of the most direct means for inferring clues about protein function. J. Wohlschlegel heads this Core in which protein complexes are isolated and characterized using shotgun proteomic methods, which includes the identification of the composition, post-translational modification state, and architecture of complexes. The Core possesses a Sutter P-2000 laser puller and pressure loading bombs for column packing and loading, a Thermoelectron LTQ-Orbitrap coupled to an Agilent HP1200 quaternary pump for 2DLC-MS/MS (MudPIT) analyses, and access to a high performance Linux-based computing cluster for the computational analysis of the shotgun proteomic data. A goal of **Plath** and other investigators is to determine how chromatin modifiers and pluripotency transcription factors interact, and they are tackling this question in the Mass Spectrometry Core.

Molecular Screening Shared Resource (MSSR): Stem cell researchers, such as Kornblum, and other investigators find this core to be invaluable in the search for small molecules that promote or suppress growth or differentiation of stem cells. This high throughput screening facility has automated equipment and data collection to test 60,000 compounds (or more) of interest in a single day. Currently, the MSSR has over 75,000 chemicals and siRNA libraries targeting both human and mouse genes. High end microscopy within this Core allows visual screening of a large number of plates. Pyle is using small molecule and siRNA screening in the MSSR Core to identify pathways in hESC self-renewal, survival, and differentiation. In addition to deciphering pathways important for the hESC state, these studies will improve hESC culturing and define the requirements for animal-free, feeder free conditions that will be required for GMP-certified stem cell therapies.

Zebra Fish Core: UCLA has recently established a zebra fish core facility that is capable of performing large-scale genetic studies of stem cell development.

Behavioral Genetics Core: Investigators in neural repair will utilize the mouse behavioral genetics core to evaluate behavioral outcomes of experimental therapies as well as investigators who create and study new models of neurological disease.

AIDS BSL3 Biocontainment Core: This Virology/BSL 3 Tissue Culture Core Laboratory provides testing services, blood and blood cell products, and other specialized services to research labs working with HIV and other related viruses. A dedicated and fully stocked BSL 3 level lab is also

maintained and made available to researchers conducting independent experiments. The core is able to assist individual researchers with special projects related to HIV detection.

Human Tissue Procurement Bank: The human tissue procurement bank will serve to provide tumor samples to test expression of specified genes and proteins being studied by the cancer stem cell groups. Additionally, the core will provide fresh samples for the study of human cancer stem cells.

Preclinical Imaging facility: established in 1990 and since its inception, over 20,000 microPET, 6000 microCT, and 50,000 optical studies have been successfully conducted. The facility is staffed by 4 full time members. Staff responsibilities include assisting investigators with obtaining the necessary authorizations for animal and radiation usage, training new investigators on the operation and analysis of imaging systems, assisting with animal preparation, and minor surgery such as catheterizations, and operation of microPET systems, including calibration tests, image creation and quality control. This core will also reconstruct images for microPET and CT, archive and verify availability of images, and maintain and report records required by various authorization committees.

The imaging equipment includes 3 Xenogen IVIS 100 systems (Caliper Life Sciences, Alameda, CA), a Maestro System for multispectral fluorescence imaging (CRi, Cambridge, MA), a microPET imaging system (Focus 220 Siemens Preclinical Solutions, Knoxville, TN) and a MicroCAT II (Siemens Preclinical Solutions) small animal CT system. Scheduling and information about the imaging systems is located online at Online Animal Imaging Scheduler for Imaging Systems (OASIS) website. Imaging data are created on the local imaging systems and archived through a central archival system developed specifically to handle any type of image data format.

Nude/SCID Mouse Core Facility: Pluripotency of current and newly derived hESCs is tested by teratoma formation in Nude/SCID mice in the Nude/SCID Mouse Core Facility, led by **Zack** in partnership with the JCCC. Tumors are evaluated histologically by pathologist **Teitell** and immunostained for the three germlayers. Teratoma formation of genetically modified hESCs can be followed with bioluminescence or PET scanning in the UCLA Crump Imaging Core for Rodents.

PET and PET/CT Human Imaging Facility: The clinical imaging center provides PET imaging services and support for projects involving human subjects. This technical center is also developing new methodologies to improve image resolution and quantitative accuracy using both conventional PET instrumentation and the multi-modality imaging and gating capabilities of the new generation of PET/CT systems. The clinical research PET and PET/CT Human Imaging core is located in the UCLA Nuclear Medicine Clinic. It is a shared research and clinical service facility. The imaging center operates 2 conventional PET scanners (EXACT HR+) and one PET/CT system (REVEAL-RT/Siemens Biograph DUO) and has over the years developed numerous image acquisition and processing protocols for different research and clinical studies involving human subjects. For processing and viewing of the PET images 10 SUN workstations, 9 Siemens SYNGO (DICOM compliant) workstations (PC Based) and 2 Mirada workstations are available. A network of more than 30 PCs and Macintosh systems provide additional display and analysis capabilities.

UCLA CARE Center and CFAR Clinical Cores facilitate clinical studies in AIDS stem cell gene therapy trials. The CARE Center serves as the primary site for HIV/AIDS patient care and clinical research at UCLA. By providing outpatient clinical care and management of HIV positive

individuals in a separate, dedicated, multidisciplinary clinic setting, the CARE Center is able to attract potential research subjects for clinical trials, basic research, epidemiology and bio-behavioral studies. In October, 2005 the CARE Clinic and the Center's administrative offices moved to a larger, off campus site about 3 miles from UCLA, which has allowed for expansion and growth of the program and is more conveniently located to HIV+ patients in the community. The clinic has over 1700 HIV patients in care seen by 7 HIV specialist physicians. CFAR clinical cores include the Gene and Cellular Therapy, Mucosal Immunology, and Clinical Research Facilitation Cores. These facilities aid in obtaining samples from lymphoid tissues during clinical studies, and facilitate interactions with the IRB, respectively.

SECTION 5: BUDGET, COST PLAN SUMMARY AND COST ESTIMATE

SECTION 5A: Excel template Capital Improvement Budget (CIB) and explanation of all assumptions and basis for costs in comparison to recent experience.

The total approved project budget for LSRB is $155,378,000. To calculate the UCLA CIRM Institute's proportionate share of the building, the LSRB budget has been adjusted for $3,637,000 of projected interest during construction. This amount is not eligible for inclusion in the CIRM grant application or the calculation of leverage. The LSRB budget (excluding interest expense) totals $151,741,000. Applying the 20.1% share for CIRM-related space yields eligible costs of $30,499,941. This amount has been further reduced by the amount of campus funds spent to date of $1,888,667 to yield a net grant application amount of $28,611,274, before the inclusion of Group 1 equipment. Group 1 equipment would include laboratory benches; shared vivarium equipment such as glassware washer, cage and bottle washer, bottle filler, bedding dispenser, ultra violet lighting and trash compacter; and ventilated racks with cages dedicated to Institute activities in the vivarium at a total cost of $1,035,000. With Group 1 equipment, the total requested CIRM funds are $29,646,274 (See Subpart C).

SECTION 5B: Excel template of the cost plan summary, based on the budgeted costs.

Please see Subpart C.

SECTION 5C: Provide a cost plan/estimate prepared by the design professional

At the end of working drawings for LSRB, estimated costs were higher than originally budgeted due to continued volatility in the construction market and additional escalation resulting from the delay in passage of the November 2006 State bond measure. In response to this potential overage, the campus proposed a bidding strategy utilizing additive alternates. The bidding documents reflected a base bid with unimproved space in the North Wing and basement vivarium and two additive alternates to complete the fit out of these areas. The cost estimate provided in Attachment 5 reflects this bidding strategy.

On April 26, 2007, the campus accepted the base bid and two alternates, thus enabling the campus to complete the full scope of the project as previously approved. The low bidder was PCL, with a total lump sum bid of $122.95 million, including the accepted alternates. A total project budget of $155,378,000 was approved by the University of California Office of the President in May 2007. Funding for the project included $92.8 million of State funds, external financing of $45.5 million, and $17.1 million of other campus resources. The Capital Improvement Budget for the Life Sciences Replacement Building project is included in Attachment 5.

SECTION 6: FUNDING PLAN, LEVERAGE, & DRAWDOWN SCHEDULE

SECTION 6A: Leverage Ratio Template
Please see Subpart D.

SECTION 6B: Excel template drawdown schedule
Please see Subpart D.

SECTION 6C: Provide an explanation of how the facility to be funded under this RFA will be operated over the long term. Explain how the facility will be managed (e.g. how space will be assigned; whether departmental research space managed by a dean or organized research space managed by the director of an organized research unit).
Facility space is assigned by a faculty committee under the direction of O. Witte. The committee, representative of the needs of the BSCRC and campus research, prepared a plan which was reviewed by the BSCRC membership (represented by faculty from the Schools of Medicine, Engineering, Public Health, Dentistry, and the Life Sciences). The input from various stakeholders was evaluated and used to formulate a plan that utilizes the proposed Facility in a manner that offers the best value to scientific research and to CIRM. The plan emphasized flexible laboratory space with a high priority for the strongest and advanced stem cell programs in the X, Y, and Z components while recognizing the need to support young investigators, particularly physician-scientists, with new and innovative ideas as well as unique core facilities that would provide cutting-edge resources not found elsewhere to stem cell scientists.

The faculty assigned space in the Facility were selected based on the strength of their scientific program, proven leadership ability to drive new initiatives, ability to cross the boundaries between different research areas, and strong commitment to stem cell research. Additional investigators whose research will contribute to the richness of the various research initiatives are located within a five minute walk from the Facility (See Figure 1).

In the future stem cell investigators will be invited to apply for space in the Facility. During the lifespan of the Facility, the BSCRC Directors will review space utilization by BSCRC members' currently occupying Facility space. Faculty occupying Facility space will be required to reapply for space according to predetermined timeline. The review will emphasize the research quality and productivity of applying investigators, and the relevance of their research to stem cell science (see below). Applications will be reviewed by a scientific review panel consisting both of non-Facility based UCLA faculty and qualified extramural reviewers. The review panel will assign priority scores to the applications, and the priority scores and recommendations derived from this review will be used to make new space assignments.

Several principles guide the space review and space assignments:

The UCLA Chancellor formally assigned the Facility space within the LSRB to the BSCRC Director from the Chancellor as detailed in this application.

A. No specific Dean or Department Chairman has any pre-determined space within the BSCRC, or any supervisory role of the Director.

B. Faculty of any UCLA school or college may apply to the BSCRC for potential space assignment so long as applicant's research focuses on stem cell science.

C. The Director of the BSCRC will conduct a review process to evaluate such faculty requests and decide on the specific faculty to be located in the building. All space assignments will be reviewed at 4 year intervals.

D. All stem cell faculty hold their primary appointments in UCLA academic departments. The primary responsibility for providing research and office space for UCLA faculty resides with the academic departments of the faculty members.

E. Six criteria will be used to evaluate space requests:

1. Scientific quality of the applicant's work
2. Stem cell relevance of the applicant's work
3. Scientific productivity of the applicant (number of recent peer-reviewed journal articles, etc.)
4. Likelihood of scientific productivity over the next three years
5. Demonstrated need for space in the Facility (as opposed to other locations)
6. Potential for interdisciplinary collaborations within BSCRC space

F. Some space in the Facility is classified as "core space" and will be reviewed as BSCRC Research Shared Resources.

G. Investigators will be responsible for funding their own relocation into Facility space.

H. Some laboratories and offices in the BSCRC will be reserved as "Director's Space," to be used to meet urgent programmatic needs; e.g., recruitment of new faculty important to the overall BSCRC mission.

I. Any space vacated by attrition of faculty investigators (e.g. by faculty members who retire or move to other institutions, stop doing research, lose their research support, etc.) reverts to the BSCRC Director.

J. New investigators assigned space in the Facility must move within three months of assignment, or – if building modifications are required – within two months of completion.

Cores: The Facility director, **O. Witte**, will have overall responsibility for the operation of all cores. However, day to day operations will be the purview of faculty members assigned to supervise each core laboratory. The nature of some cores will dictate the hiring of non-academic staff for operation, and they, along with the faculty supervisor, will develop operating procedures. In particular, core directors will ensure that laboratory access is limited to authorized UCLA and Caltech scientists.

UCLA has a strong track record in the operation of research cores. The JCCC operates numerous core laboratories that include tissue procurement and storage, flow cytometry, small molecule screening, and preparation of vectors. Many of these cores, such as flow cytometry, have been well established for over a decade and have operated without incurring deficits. The BSCC will follow the JCCC model and establish faculty oversight committees that will work with the director of each core to formulate operating policy. Thus, platforms for use, oversight, and fiscal management that already in place in the JCCC and will be extended to the cores in the Facility.

Identify the source and commitment of funds needed for ongoing operation and maintenance of the facility to ensure its operations for the intended use.

The LSRB, including the proposed CIRM occupancy, is 100% eligible for State funding for operations and maintenance of plant (OMP). Based on the scheduled LSRB completion date of May 20010, a new OMP workload request will be submitted during FY2009-10 in order to receive OMP funding for FY 2010-11, beginning in July 2010. The Facility will be financially supported through the Chancellor's on-going commitment to the BSCRC and stem cell science, BSCRC funds, and recharge use of Core resources.

SECTION 7: SCHEDULE/IMPLEMENTATION PLAN

SECTION 7A: Schedule for the proposed project using the CIRM Schedule Template

UCLA is firmly committed to delivering the LSRB project within the two year time frame from award. As evidenced by the project schedule, site photographs and billing documents provided by the contractor, the UCLA proposal is on track to complete by May 2010. Risk related to project approvals, procurement of financing, environmental approvals, site conditions and bid risk have all been mitigated and their respective milestones have been met. Additionally, the most recent construction status report submitted by PCL (See Attachment 6) demonstrates a cumulative billing amount of $17.9 million (14.56% complete) as of January 2008. The billing amount is ahead of their projected schedule target of $16.2 million (13.16% complete) (See Subpart E).

SECTION 7B: Current status of approvals. Describe the current status of needed approvals and any major schedule issues associated with internal/external approvals, including design, EIS, local/state permits.

The LSRB project is currently under construction, with no schedule issues associated with internal/external approvals. The Regents of the University of California have approved the project and certified its Final EIR, and the contract for construction was awarded in May 2007. The project is scheduled for completion in May 2010.

SECTION 7C: Identify the responsible team for implementing the project and the roles of the owner's representative, design and project manager.

Capital Programs Organization

UCLA's Capital Programs organization is responsible for the management of campus capital assets and the conceptualization, planning, design, and delivery of all major capital projects. This organization reports directly to the Vice Chancellor for Finance, Budget and Capital Programs. This senior executive also serves as the campus Chief Financial Officer and director of UCLA's academic, strategic, and budgetary planning processes. The Vice Chancellor reports directly to the Chancellor and Executive Vice Chancellor, thereby ensuring that the planning and execution of capital projects is integrated with UCLA's broader planning processes.

Capital Programs was originally formed in 1986 as a consolidated capital delivery system. In addition to managing projects, Capital Program's staff develop financial strategies, undertake architectural design, conduction building department reviews of plans and specifications, carry out environmental reviews, prepare and negotiate construction contracts and agreements, coordinate staging plans, and serve as a repository for project records and as-built plans.

Capital Programs' defining principles, in support of its mission, include the following:

- Development of physical master plans and construction projects which adhere to campus design parameters, address land use, aesthetics and environmental issues, and which respond to campus and community interests;
- Management of the planning, design and construction of approved capital projects within established budgets and schedules;
- Communication of timely and accurate project information to campus executive management and project users; and
- Administration of construction contracts, project funding and accounting, and managing Capital Programs staff and budgets consistent with University policies and procedures.

Senior Management Team

Steven Olsen, Vice Chancellor - Finance, Budget and Capital Programs

Mr. Olsen has served at UCLA since 1999. As Vice Chancellor for Finance, Budget, and Capital Programs, he is UCLA's Chief Financial Officer and oversees the planning, design, construction, and financing of all campus buildings. Prior to his service at UCLA, Olsen had a twenty year career with the State of California. He served as Deputy Director of the California Department of Finance, and as Chief Deputy Director of the California Department of General Services. In that capacity, he was responsible for the operation of major business services for the state, including real estate, procurement, telecommunications, and office and school construction.

Sue Santon, Associate Vice Chancellor – Capital Planning and Finance

Ms. Santon joined Capital Programs in 1990. She is responsible for project development activity, including program analysis, financial feasibility, and the development of the capital improvement budget and project schedule. She is also responsible for the management of the State and Non-State Capital Improvement Program, campus debt modeling, contracts administration, environmental compliance, plant accounting, and records management. Prior to joining UCLA, Santon had ten years of corporate finance experience on Wall Street and was a Vice President at The First Boston Corporation and Morgan Stanley. She has an undergraduate degree in Economics from Smith College and a MBA with a concentration in Finance from Harvard Business School.

Peter Hendrickson, Associate Vice Chancellor – Design and Construction

Mr. Hendrickson joined Capital Programs in June, 2007. Hendrickson manages Design Services, Engineering services, project management and construction management staff. Prior to coming to UCLA, Peter served as Director, Facilities Planning, Design, and Construction at Cedars-Sinai Health System and was responsible for the implementation of a $700 million Master Facilities Plan. Prior to his tenure at Cedars-Sinai, he served as Chief, Health Facilities Planning Services for the Los Angeles County Department of Health Services. In this position he managed recovery projects related to the Northridge Earthquake and directed the adoption of architectural design standards for the County's ambulatory health care facilities. Hendrickson received his Bachelor of Architecture degree from California Polytechnic State University, San Luis Obispo.

Project Delivery Team

Stephanie Tollenaere, Director- Project Management

Ms. Tollenaere joined Capital Programs in 2001. Prior to coming to UCLA, Tollenaere worked at Gensler (Los Angeles) and ARCO. She has over 25 years of comprehensive project management, space planning, interior design, and construction management experience. Her major project assignments have included a series of projects in the Northwest Campus, consisting of three nine-story residence halls (2,000 beds), three residence halls first floor renovations, and a 300 car parking garage. These projects totaled 620,000 gross square feet and had a total project value of approximately $200 million. Tollenaere is also the Principal Project Manager for the Life Sciences Replacement Building and site preparation projects.

Thomas LaVanne, Director- Construction Services

Mr. LaVanne joined Capital Programs in 1999. He has been the Director of Construction Services since 2000 and has overseen the construction of more that twenty projects including the California Nano Science Institute ($166.6M), the Engineering 1 Replacement Building ($55.9M), the Physics and Astronomy Building ($44.9M), and the Northwest Campus projects ($200M). Prior to joining UCLA, LaVanne was associated with O'Brien Krietzberg from 1984-

1999. He has 31 years of experience in scheduling, estimating, cost control, value engineering, field supervision and construction claims analysis.

Project Volume

Since 1986, approximately $4.2 billiion has been deployed on the UCLA campus to complete a variety of new construction, renovation, and infrastructure projects. Forty new buildings or building complexes, one expanded and three new parking facilities, and 32 major building additions have been constructed on campus. In addition, 23 existing buildings have been seismically and/or programmatically renovated. Roughly half of the campus physical plant as it existed in the mid-1980s will have experienced some degree of renovation and the inventory of campus building space will have increased by nearly a third. Since 2004, the campus has completed in excess of $1 billion in new construction, renovation and infrastructure projects.

Provide the historical record of this team in completing prior projects of comparable size and complexity and on schedule.

UCLA has executed a high volume of complex projects since UCLA Capital Programs organization was established in 1986. Most relevant to the CIRM application process is the track record of projects involving the collaboration of Capital Programs and PCL Construction Services. In addition to the LSRB project that is currently under construction, PCL has recently completed three other campus projects: The Kinsey Hall Seismic Correction, Phase 2; Rieber North and West Residence Halls and First Floor Renovation; and Dykstra Parking Structure. These projects represented a total project cost of $34.9 million, $102.6 million and $7.2 million, respectively.

Kinsey Hall Seismic Correction, Phase 2

PCL was issued a Notice to Proceed on May 7, 2004. The original contract duration of 730 days had an estimated completion date of May 6, 2006. A Temporary Certificate of Occupancy and Notice of Substantial Completion were issued on June 6, 2006.

Rieber North and West Residence Halls and First Floor Renovation

PCL was issued a Notice to Proceed on June 10, 2003. The original contract duration of 820 days had an estimated completion date of December 8, 2005 for a multi-phase project. A Temporary Certificate of Occupancy was issued on September 1, 2005, in time for students to occupy the buildings for the Fall semester, with post-occupancy site work continuing after move-in.

Dykstra Parking Structure

PCL was issued a Notice to Proceed on June 18, 2003. The original contract duration of 367 days had an estimated completion date of June 19, 2004. A Temporary Certificate of Occupancy was issued on June 14, 2004.

SECTION 8: PLANS & SPECIFICATIONS

SECTION 8A: Half size building floor plans

Half size plans are provided for the 3rd floor and basement vivarium (See Subpart F and enclosed CDs). Dedicated space in the vivarium includes barrier holding rooms (B156c, B156e) and procedure rooms (B156c1 and B156d).

SECTION 8B: Outline Specifications reflecting the most current developed project stage

Outline specifications are no longer applicable since the project is under construction and 100% construction specifications have been incorporated into the construction contract.

SECTION 8C: Table of gross and assignable square feet.

Space Type	ASF	GSF
Dedicated Space:		
Research Laboratory (PI)	3,955	
Research Laboratory (Shared)	1,973	
Research Laboratory Support (PI & Shared)	5,662	
Core Laboratory	3,436	
Offices (PI)	1,060	
Offices (Other)	1,825	
Administration & Support	690	
Vivarium	652	
Subtotal	**19,253**	**30,920**
Shared Building Support:		
Administration & Support	347	
Vivarium	1,514	
Total	**21,114**	**34,587**
Building Total	**105,265**	**176,590**
CIRM Institute Share of Building	**20.1%**	

SECTION 8D: Explain how the space plan executes (or provides) the space applicant stated was required in the table submitted in Subpart E of Part 1 of the application.

There is no change in the dedicated asf to the UCLA CIRM Institute. Subpart E of the Part 1 application indicated a total of 19,253 asf comprised of 13,519 asf of lab and office space, 4,485 asf of Core laboratory (including vivarium), and 1,249 asf of administrative space.

The table above provides a breakdown of the 19,253 asf into the required space type categories. In addition, a pro-rated portion of shared building support space has been added, providing the shared portion of building-wide administrative support space on the first floor that includes a large conference room, and central copy, mail, and loading dock and building management offices; and the shared portion of the vivarium that includes receiving, decontamination, quarantine, cage wash, gowning, locker break room and storage facilities. In total, the Institute would utilize 21,114 asf in LSRB.

C. P. O'Halloran Associates Inc.

CONSTRUCTION COST MANAGEMENT

100% CONSTRUCTION DOCUMENT COST ESTIMATE

for

Life Sciences Replacement Building
University of California, Los Angeles

Prepared for :

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 # 04-1550

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100% Construction Document Cost Estimate

Basis of Estimate

The estimate is based on 100% construction document drawings and specifications. Estimated unit costs are based on average April 2006 union labor billing rates with prevailing wages and competitive bid conditions. Competitive bid conditions generally occur when bids are received from a minimum of three general contractors and three subcontractors for each trade.

The estimated construction cost represents our best judgment as a professional consultant familiar with the construction industry. We have no control over the cost or supply of labor, materials and equipment, a contractor's methods of determining bid prices and market conditions. We cannot and do not warranty or represent that bids or negotiated prices will not vary from the estimated construction cost.

Estimate Exclusions

Professional design, testing, inspection and management fees.
Fire and all risk insurance.
Legal and financing costs.
Building permits and fees.
Construction, project or staging contingencies.
Telecommunications equipment and wiring.
Security equipment and wiring.
Audio visual equipment and wiring.
Moveable equipment and furnishings

100% Construction Document Cost Estimate

		176,590 GSF	
COMPONENT SUMMARY		**$/GSF**	**$**
1. Foundations		42.35	7,477,981
2. Vertical Structure		39.47	6,969,751
3. Floor and Roof Structure		50.42	8,903,185
4. Exterior Cladding		60.79	10,734,708
5. Roofing and Waterproofing		5.84	1,031,839
Shell (1 - 5)		198.86	35,117,463
6. Interior Partitions and Doors		23.18	4,093,280
7. Interior Finishes - Floors, Walls, Ceilings		17.35	3,063,304
Interiors (6 - 7)		40.53	7,156,584
8. Fixed Equipment, Casework and Specialties		36.32	6,413,127
9. Stairs and Elevators		8.28	1,462,038
Equipment, Stairs and Elevators (8 - 9)		44.60	7,875,166
10. Plumbing		44.40	7,840,157
11. Heating, Ventilation, Air Conditioning		78.10	13,790,989
12. Electrical		54.99	9,710,383
13. Fire Protection		5.46	964,538
Mechanical and Electrical (10 - 13)		182.94	32,306,068
Building (1-13)		466.93	82,455,280
14. Site Preparation		2.60	459,987
15. Site Development		8.51	1,502,490
16. Site Utilities		4.41	778,309
Sitework (14-16)		15.52	2,740,786
TOTAL BUILDING & SITE (1 - 16)		482.45	85,196,066
General Conditions and Supervision	10.0%	48.25	8,519,607
Bonds and Insurances	2.0%	10.61	1,874,313
Overhead and Profit	4.0%	21.65	3,823,599
BUDGET FOR BUILDING & SITE (April 2006 Costs)		562.96	99,413,586
Cost Escalation 26 Months to Construction Mid Point, 06/2008 @ 10% Per Year 04/2006 to 12/2006 and 8% Per Year 01/2007 to 06/2008	20.6%	115.97	20,479,199
TOTAL CONSTRUCTION ESCALATED		678.93	119,892,784

Alternate Costs (Escalated To Construction Mid Point)

Note: The costs of the alternates are included in the $119,892,784 construction estimate

Alternate #1	Complete Fit-Out of North Wing Floor Levels 3, 4 & 5	$9,350,000
Alternate #2	Complete Fit-Out of Vivarium and North Wing Floor Levels 1 & 2	$12,189,000

LSRB Green Building Scoresheet

UC-LEED™ Equivalent + Labs 21 EPC

Notes: 1. EPC additions and modifications to LEED™ 2.1 are highlighted.

		Points Possible	Campus Baseline	LSRB Points
Sustainable Sites		16	8	9
Prereq 1	**Erosion & Sedimentation Control**	Required		
Credit 1	**Site Selection**	1	1	1
Credit 2	**Urban Redevelopment**	1	1	1
Credit 3	**Brownfield Redevelopment**	1		
Credit 4.1	**Alternative Transportation**, Public Transportation Access	1	1	1
Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1	1	1
Credit 4.3	**Alternative Transportation**, Alternative Fuel Refueling Stations	1		
Credit 4.4	**Alternative Transportation**, Parking Capacity	1	1	1
Credit 5.1	**Reduced Site Disturbance**, Protect or Restore Open Space	1		
Credit 5.2	**Reduced Site Disturbance**, Development Footprint	1	1	1
Credit 6.1	**Stormwater Management**, Rate or Quantity	1		
Credit 6.2	**Stormwater Management**, Treatment	1		
Credit 7.1	**Landscape & Exterior Design to Reduce Heat Islands**, Non-Roof	1	1	1
Credit 7.2	**Landscape & Exterior Design to Reduce Heat Islands**, Roof	1		
Credit 8	**Light Pollution Reduction**	1	1	1
Credit 9.1	**Safety and Risk Management**, Air Effluent	1		1
Credit 9.2	**Safety and Risk Management**, Water Effluent	1		
Water Efficiency		7	0	3
Prereq 1	**Laboratory Equipment Water Use**	Required		
Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1		1
Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1		
Credit 2	**Innovative Wastewater Technologies**	1		
Credit 3.1	**Water Use Reduction**, 20% Reduction	1		1
Credit 3.2	**Water Use Reduction**, 30% reduction	1		
Credit 4.1	**Process Water Efficiency**, Document Baseline	1		1
Credit 4.2	**Process Water Efficiency**, 20% Reduction	1		
Energy & Atmosphere		25	8	9
Prereq 1	**Fundamental Building Systems Commissioning**	Required		
Prereq 2	**Minimum Energy Performance**	Required		
Prereq 3	**CFC Reduction in HVAC & R Equipment**	Required		
Prereq 4	**Assess Minimum Ventilation Requirements**	Required		
Credit 1.1	**Optimize Energy Performance**, 5%	1	1	1
Credit 1.2	**Optimize Energy Performance**, 10%	1	1	1
Credit 1.3	**Optimize Energy Performance**, 15%	1	1	1
Credit 1.4	**Optimize Energy Performance**, 20%	1	1	1
Credit 1.5	**Optimize Energy Performance**, 25%	1		1
Credit 1.6	**Optimize Energy Performance**, 30%	1		
Credit 1.7	**Optimize Energy Performance**, 35%	1		

Credit 1.8	**Optimize Energy Performance,** 40%	1		
Credit 1.9	**Optimize Energy Performance,** 45%	1		
Credit 1.10	**Optimize Energy Performance,** 50%	1		
Credit 2.1	**Renewable Energy, 2% Contribution**	1	1	1
Credit 2.2	**Renewable Energy, 5% Contribution**	1	1	1
Credit 2.3	**Renewable Energy, 10% Contribution**	1		
Credit 3	**Additional Commissioning**	1		
Credit 4	**Ozone Depletion**	1		
Credit 5	**Measurement & Verification**	1		
Credit 6	**Green Power**	1		
Credit 7.1	**Energy Supply Efficiency,** 10%	1	1	1
Credit 7.2	**Energy Supply Efficiency,** 20%	1	1	1
Credit 7.3	**Energy Supply Efficiency,** 30%	1		
Credit 7.4	**Energy Supply Efficiency,** 40%	1		
Credit 7.5	**Energy Supply Efficiency,** 50%	1		
Credit 8	**Improve Laboratory Equipment Efficiency**	1		
Credit 9.1	**Right-size Laboratory Equipment Load**: Measure Comparable Lab	1		
Credit 9.2	**Right-size Laboratory Equipment Load**: Metering Provision	1		
Materials & Resources		14	3	6
Prereq 1	**Storage & Collection of Recyclables**	Required		
Prereq 2	**Hazardous Material Handling**	Required		
Credit 1.1	**Building Reuse,** Maintain 75% of Existing Shell	1		
Credit 1.2	**Building Reuse,** Maintain 100% of Shell	1		
Credit 1.3	**Building Reuse,** Maintain 100% Shell & 50% Non-Shell	1		
Credit 2.1	**Construction Waste Management,** Divert 50%	1	1	1
Credit 2.2	**Construction Waste Management,** Divert 75%	1	1	1
Credit 3.1	**Resource Reuse,** Specify 5%	1		
Credit 3.2	**Resource Reuse,** Specify 10%	1		
Credit 4.1	**Recycled Content,** Specify 25%	1		1
Credit 4.2	**Recycled Content,** Specify 50%	1		
Credit 5.1	**Local/Regional Materials,** 20% Manufactured Locally	1	1	1
Credit 5.2	**Local/Regional Materials,** of 20% Above, 50% Harvested Locally	1		
Credit 6	**Rapidly Renewable Materials**	1		
Credit 7	**Certified Wood**	1		1
Credit 8	**Chemical Resource Management**	1		1
Indoor Environmental Quality		18	5	11
Prereq 1	**Minimum IAQ Performance**	Required		
Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Required		
Prereq 3	**Laboratory Ventilation**	Required		
Prereq 4	**Exterior Door Notification System**	Required		
Credit 1	**Carbon Dioxide** (CO_2) **Monitoring**	1		
Credit 2	**Increase Ventilation Effectiveness**	1		
Credit 3.1	**Construction IAQ Management Plan,** During Construction	1	1	1
Credit 3.2	**Construction IAQ Management Plan,** Before Occupancy	1		1
Credit 4.1	**Low-Emitting Materials,** Adhesives & Sealants	1	1	1
Credit 4.2	**Low-Emitting Materials,** Paints	1	1	1
Credit 4.3	**Low-Emitting Materials,** Carpet	1	1	1
Credit 4.4	**Low-Emitting Materials,** Composite Wood	1		1
Credit 5	**Indoor Chemical & Pollutant Source Control**	1		1
Credit 6.1	**Controllability of Systems,** Perimeter	1		
Credit 6.2	**Controllability of Systems,** Non-Perimeter	1		

Credit 7.1	**Thermal Comfort,** Comply with ASHRAE 55-1992	1	1	1
Credit 7.2	**Thermal Comfort,** Permanent Monitoring System	1		
Credit 8.1	**Daylight & Views,** Daylight 75% of Spaces	1		1
Credit 8.2	**Daylight & Views,** Views for 90% of spaces	1		1
Credit 9.1	**Indoor Environmental Safety,** Airflow Modeling	1		1
Credit 9.2	**Indoor Environmental Safety,** Fumehood Commissioning	1		
Credit 9.3	**Indoor Environmental Safety,** Alarm Systems	1		
Innovation & Design Process		5	2	2
Credit 1.1	**Innovation in Design**: Specific Title	1	1	1
Credit 1.2	**Innovation in Design**: Specific Title	1		
Credit 1.3	**Innovation in Design**: Specific Title	1		
Credit 1.4	**Innovation in Design**: Specific Title	1		
Credit 2	**LEED™ Accredited Professional**	1	1	1
Project Totals		85	26	40
Certified 32 points; **Silver** 41 points; **Gold 49** points: **Platinum** 65 points				

SECTION 01352

UC-EQUIVALENT LEED™ REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes general requirements and procedures for compliance with certain University of California Equivalent - U.S. Green Building Council (USGBC) LEED™ prerequisites and credits needed for the Project to obtain UC-Equivalent LEED™ certification, referred to herein as UC-LEED™

1. Other UC-LEED™ prerequisites and credits needed to obtain UC-LEED™ certification are dependent on material selections and may not be specifically identified as UC-LEED™ requirements. Compliance with requirements needed to obtain UC-LEED™ prerequisites and credits may be used as one criterion to evaluate substitution requests.

2. Additional UC-LEED™ prerequisites and credits needed to obtain the indicated UC-LEED™ certification are dependent on the Architect's design and other aspects of the Project that are not part of the Work of the Contract.

B. Related Sections include the following:

1. Divisions 1 through 16 Sections for UC-LEED™ requirements specific to the Work of each of those Sections. These requirements may or may not include reference to UC-LEED™.

1.2 DEFINITIONS

A. Certificates of Chain-of-Custody: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria." Certificates shall include evidence that mill is certified for chain-of-custody by an FSC-accredited certification body.

B. LEED™: Leadership in Energy & Environmental Design.

C. UC-LEED™: University of California Equivalent Leadership in Energy & Environmental Design.

D. Rapidly Renewable Materials: Materials made from agricultural products that are typically harvested within a ten-year or shorter cycle. Rapidly renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, or wool.

E. Regionally Manufactured Materials: Materials that are manufactured within a radius of 500 miles (800 km) from the Project location. Manufacturing refers to the final assembly of components into the building product that is installed at the Project site.

F. Regionally Extracted, Harvested, or Recovered Materials: Materials that are extracted, harvested, or recovered and manufactured within a radius of 500 miles (800 km) from the Project site.

G. Recycled Content: The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer).

1. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.

2. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials.

1.3 SUBMITTALS

A. General: Submit additional UC-LEED™ submittal requirements included in other sections of the Specifications as part of regular submittals for those sections, in accordance with Division 1 Section "Shop Drawings, Product Data, & Samples."

B. Project Material Safety Data Sheets: MSDSs shall not be submitted as part of other submittals, and shall not be reviewed, but shall be submitted for compilation with UC-LEED™ Documentation, for the purpose of documenting EQ credits contributing to certification.

C. Project Materials Cost Data: Provide statement indicating total cost for building materials used for Project. Include statement indicating total cost of mechanical and electrical components.

D. UC-LEED™ Action Plans: Provide preliminary submittals within 28 days of Notice to Proceed indicating how the following requirements will be met.

1. Credit MR 2.1and 2.2: Waste management plan complying with Division 1 Section "Construction Waste Management."

2. Credit MR 4.1 and 4.2: List of proposed materials with recycled content.
   a. Indicate cost, post-consumer recycled content, and pre-consumer recycled content for each product having recycled content.

3. Credit MR 5.1 and 5.2: List of proposed regionally manufactured materials and regionally extracted, harvested, or recovered materials.
   a. Identify each regionally manufactured material, its source, and cost.
   b. Identify each regionally extracted, harvested or recovered material, its source, and cost.

4. Credit MR 7.0: List of proposed certified wood products.
   a. Indicate each product containing certified wood, its source, and cost.
   b. Include statement indicating total cost for wood-based materials used for Project, including non-rented temporary construction.

5. Credit EQ 3.1: Construction indoor air quality management plan.

E. UC-LEED™ Progress Reports: Concurrent with each Application for Payment, submit reports comparing actual construction and purchasing activities with LEED action plans for the following:

1. Credit MR 2.1 and 2.2: Waste reduction progress reports complying with Division 1 Section "Construction Waste Management."

2. Credit MR 4.1 and 4.2: Recycled content.

3. Credit MR 5.1 and 5.2: Regionally manufactured materials and regionally extracted, harvested, or recovered materials.

F. UC-LEED™ Documentation Submittals:

1. Credit SS 7.2: Product Data for roofing materials indicating Energy Star compliance.

2. Credit SS 8.0: Product Data for interior and exterior lighting fixtures that stop direct-beam illumination from leaving the building site.

3. Credit WE 3.1 and 3.2: Product Data for plumbing fixtures indicating water consumption.

4. Prerequisite EA 3.0: Product Data for new HVAC equipment indicating absence of CFC refrigerants.

5. Credit MR 2.1 and 2.2: Comply with Division 1 Section "Construction Waste Management."

6. Credit MR 4.1 and 4.2: Product Data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for each product having recycled content.

7. Credit MR 5.1 and 5.2: Product Data indicating location of material manufacturer for regionally manufactured materials.
   a. Include statement indicating cost and distance from manufacturer to Project for each regionally manufactured material.
   b. Include statement indicating cost and distance from point of extraction, harvest, or recovery to Project for each raw material used in regionally manufactured materials.

8. Credit MR 7.0: Product Data and certificates of chain-of-custody for products containing certified wood.
   a. Include statement indicating costs for each product containing certified wood.
   b. Include statement indicating total cost for wood-based materials used for Project, including non-rented temporary construction.

9. Credit EQ 3.1:
   a. Construction indoor air quality management plan.
   b. Product Data for temporary filtration media.
   c. Product Data for filtration media used during occupancy.
   d. Construction Documentation: Six photographs at three different occasions during construction along with a brief description of the SMACNA approach employed,

documenting implementation of the IAQ management measures, such as protection of ducts and on-site stored or installed absorptive materials.

10. Credit EQ 3.2:
    a. Signed statement describing the building air flush-out procedures including the dates when flush-out was begun and completed and statement that filtration media was replaced after flush-out.
    b. Product Data for filtration media used during flush-out and during occupancy.
    c. Report from testing and inspecting agency indicating results of IAQ testing and documentation showing conformance with IAQ testing procedures and requirements.

11. Credits EQ 4.1 and 4.2:
    a. Credit EQ 4.1: Product Data and Material Safety Data Sheets (MSDSs) for adhesives and sealants used on the interior of the building indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D (EPA method 24).
    b. Credit EQ 4.2: Product Data and Material Safety Data Sheets (MSDSs) for paints and coatings used on the interior of the building indicating chemical composition and VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D (EPA method 24).
    c. MSDSs are specified to be provided for purposes of UC-LEED™ documentation only. They are not Action Submittals. University Representative will not review MSDSs, but will accept them only to include them in UC-LEED™ documentation.

12. Credit EQ 4.3: Product Data for carpet products indicating VOC content of each product used.

13. Credit EQ 4.4: Product Data for composite wood and agrifiber products indicating that products contain no urea-formaldehyde resin.
    a. Include statement indicating adhesives and binders used for each product.

14. Credit EQ 7: Product Data and Shop Drawings for sensors and control system used to monitor and control room temperature and humidity.

PART 2 - PRODUCTS

2.1 RECYCLED CONTENT OF MATERIALS

A. Credits MR 4.1 and MR 4.2: Provide building materials with recycled content such that post-consumer recycled content constitutes a minimum of 10 percent of the cost of materials used for the Project or such that post-consumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 20 percent of the cost of materials used for the Project.

1. The cost of post-consumer recycled content of an item shall be determined by dividing the weight of post-consumer recycled content in the item by the total weight of the item and multiplying by the cost of the item.

2. The cost of post consumer recycled content plus one-half of pre-consumer recycled content of an item shall be determined by dividing the weight of post-consumer recycled content plus one-half of pre-consumer recycled content in the item by the total weight of the item and multiplying by the cost of the item.

3. Do not include mechanical and electrical components in the calculation.

4. Recycled content of materials shall be defined according to the Federal Trade Commission's "Guide for the Use of Environmental Marketing Claims," 16 CFR 260.7 (e).

2.2 REGIONAL MATERIALS

A. Credit MR 5.1: Provide 20 percent of building materials (by cost) that are regionally manufactured materials.

B. Credit MR 5.2: Of the regionally manufactured materials required by Paragraph "Credit MR 5.1" above, provide at least 50 percent (by cost) that are regionally extracted, harvested, or recovered materials.

2.3 CERTIFIED WOOD

A. Credit MR 7.0: Provide a minimum of 50 percent (by cost) of wood-based materials that are produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria."

1. Wood-based materials include but are not limited to the following materials when made from made wood, engineered wood products, or wood-based panel products:
   a. Rough carpentry.
   b. Wood decking.
   c. Finish carpentry.
   d. Interior Architectural woodwork.
   e. Wood paneling.
   f. Wood cabinets.
   g. Non-rented temporary construction, including bracing, concrete formwork, pedestrian barriers, and temporary protection.

2.4 LOW-EMITTING MATERIALS

A. Credit EQ 4.1: For interior applications use adhesives and sealants that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24), or the South Coast Air Quality Management District regulations (www.aqmd.gov), whichever is more stringent:

1. Wood Glues: 30 g/L.

2. Metal to Metal Adhesives: 30 g/L.

3. Adhesives for Porous Materials (Except Wood): 50 g/L.

4. Subfloor Adhesives: 50 g/L.
5. Plastic Foam Adhesives: 50 g/L.
6. Carpet Adhesives: 50 g/L.
7. Resilient Flooring Adhesives: 50 g/L.
8. Cove Base Adhesives: 50 g/L.
9. Gypsum Board and Panel Adhesives: 50 g/L.
10. Rubber Floor Adhesives: 60 g/L.
11. Ceramic Tile Adhesives: 65 g/L.
12. Multipurpose Construction Adhesives: 70 g/L.
13. Fiberglass Adhesives: 80 g/L.
14. Structural Glazing Adhesives: 100 g/L.
15. Wood Flooring Adhesive: 100 g/L.
16. Contact Adhesive: 250 g/L.
17. Plastic Cement Welding Compounds: 350 g/L.
18. ABS Welding Compounds: 400 g/L.
19. CPVC Welding Compounds: 490 g/L.
20. PVC Welding Compounds: 510 g/L.
21. Adhesive Primer for Plastic: 650 g/L.
22. Sealants: 250 g/L.
23. Sealant Primers for Nonporous Substrates: 250 g/L.
24. Sealant Primers for Porous Substrates: 775 g/L.

B. Credit EQ 4.2: For interior applications use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24) or the South Coast Air Quality Management District regulations (www.aqmd.gov), whichever is more stringent, and the following chemical restrictions:

1. Flat Paints and Coatings: VOC not more than 50 g/L.
2. Non-Flat Paints and Coatings: VOC not more than 150 g/L.
3. Anti-Corrosive Coatings: VOC not more than 250 g/L.

4. Varnishes and Sanding Sealers: VOC not more than 350 g/L.

5. Stains: VOC not more than 250 g/L.

6. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).

7. Restricted Components: Paints and coatings shall not contain any of the following:
   a. Acrolein.
   b. Acrylonitrile.
   c. Antimony.
   d. Benzene.
   e. Butyl benzyl phthalate.
   f. Cadmium.
   g. Di (2-ethylhexyl) phthalate.
   h. Di-n-butyl phthalate.
   i. Di-n-octyl phthalate.
   j. 1,2-dichlorobenzene.
   k. Diethyl phthalate.
   l. Dimethyl phthalate.
   m. Ethylbenzene.
   n. Formaldehyde.
   o. Hexavalent chromium.
   p. Isophorone.
   q. Lead.
   r. Mercury.
   s. Methyl ethyl ketone.
   t. Methyl isobutyl ketone.
   u. Methylene chloride.
   v. Naphthalene.
   w. Toluene (methylbenzene).
   x. 1,1,1-trichloroethane.
   y. Vinyl chloride.

C. Credit EQ 4.4: Do not use composite wood and agrifiber products that contain urea-formaldehyde resin.

D. Include MSDS sheets and manufacturer certification indicating VOC content with UC-LEED™ Submittals for all interior adhesives, sealants, paints, coatings, carpet, composite wood, and agrifiber products.

E. Where applicable, provide written certification that interior materials provided are free of restricted compounds and VOC's identified in similar materials in the "Building Materials Emissions Study," November 2003, conducted by the California Department of Health Services and published by the California Integrated Waste Management Board (CIWMB), Publication Number: 433-03-015 (free report available at www.ciwmb.ca.gov/Publications/default.asp?pubid=1027).

PART 3 - EXECUTION

3.1 SITE DISTURBANCE

A. Credit SS 5.1: Does not apply to this project.

3.2 CONSTRUCTION WASTE MANAGEMENT

A. Credit MR 2.1 and 2.2: Comply with Division 1 Section "Construction Waste Management."

3.3 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT

A. Credit EQ 3.1: Comply with SMACNA IAQ Guideline for Occupied Buildings under Construction.

B. Credit EQ 3.2:

1. Conduct a building air flush-out after construction ends with new filtration media and 100 percent outside air. Replace filtration media after building air flush-out.

a. Building Flush-out: After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total air volume of 14,000 cu. ft. of outdoor air per sq. ft. of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60%.
1) When touch up work is required after flush-out, provide temporary construction ventilation during installation and extend building flush-out by a minimum of four (4) days after touch up installation with maximum tempered outside air for twenty-four (24) hours per day.
2) Return ventilation system to normal operation following flush-out period to minimize energy consumption.

END OF SECTION 01352

SUMMARY OF REVISIONS

Issue Date: Description:

Attachment 4
Group 2 Equipment to be Purchased New (PIs)

PI	New Group 2 Equipment (PIs)	Relocate Existing or Purchase New	Budget (Purchase)	Use	Suite / Room Location
Witte					
	Biosafety Cabinet	Purchase	$10,000	tissue culture work	Space assigned to PI Witte
	Double set of incubators	Purchase	$24,000	culture cells	Space assigned to PI Witte
	Table top centrifuge	Purchase	$10,000	separation of cells	Space assigned to PI Witte
	rtPCR machine	Purchase	$46,000	gene analysis	Space assigned to PI Witte
	Amaxa Nucleofection System	Purchase	$12,000	introduce genes to cells	Space assigned to PI Witte
	Multiporator	Purchase	$5,000	introduce genes to cells	Space assigned to PI Witte
	Upright fluorescence microscope w digital camera and computer	Purchase	$45,000	visualize cells & photography	Space assigned to PI Witte
	ultra centrifuge and rotor	Purchase	$42,000	concentrate virus	Space assigned to PI Witte
	liquid nitrogen freezer	Purchase	$12,000	cryofreeze cells	Space assigned to PI Witte
	2 minus 80 degree freezers	Purchase	$20,000	introduce genes to cells	Space assigned to PI Witte
	Tissue culture hood	Purchase	$10,000	tissue culture work	Space assigned to PI Witte
Kornblum					
	Table-top centrifuge	Purchase	$9,000	tissue culture	Space assigned to PI Kornblum
	2 tissue culture hoods (biosafety cabinets)	Purchase	$20,000	tissue culture work	Space assigned to PI Kornblum
	4 tissue culture incubators	Purchase	$36,000	culture cells	Space assigned to PI Kornblum
	rtPCR machine	Purchase	$46,000	gene analysis	Space assigned to PI Kornblum
	Thermocycler	Purchase	$9,000	control heat and shaker	Space assigned to PI Kornblum
	Inverted Microscope	Purchase	$8,000	for BSL2 use	Space assigned to PI Kornblum
	2 minus 80 degree freezers	Purchase	$16,000	introduce genes to cells	Space assigned to PI Kornblum
	Ultra Centrifuge	Purchase	$9,000	separation of cells	Space assigned to PI Kornblum
	qPCR System	Purchase	$20,000	gene analysis	Space assigned to PI Kornblum
	Liquid Nitrogen	Purchase	$5,000	cryofreeze cells	Space assigned to PI Kornblum
	Shaking Incubator	Purchase	$11,000	culture cells	Space assigned to PI Kornblum
	2 minus 80 degree freezers	Purchase	$20,000	introduce genes to cells	Space assigned to PI Kornblum
Fan					
	Biosafety Cabinet	Purchase	$10,000	tissue culture work	Space assigned to PI Fan
	Two cell culture incubators	Purchase	$10,000	culture cells	Space assigned to PI Fan
	Table top centrifuge	Purchase	$6,000	separation of cells	Space assigned to PI Fan
	liquid nitrogen tank	Purchase	$10,000	cryofreeze cells	Space assigned to PI Fan
	2 minus 80 degree freezers	Purchase	$20,000	introduce genes to cells	Space assigned to PI Fan
	inverted microscope	Purchase	$10,000	visualize cells	Space assigned to PI Fan
	PCR machine:	Purchase	$6,000	gene analysis	Space assigned to PI Fan
	Upright fluorescence microscope w digital camera and computer	Purchase	$45,000	visualize cells & photography	Space assigned to PI Fan
	Tissue culture hood	Purchase	$10,000	tissue culture work	Space assigned to PI Fan
Banerjee					
	Incubator	Purchase	$12,000	culture cells	Space assigned to PI Banerjee
	2 Dissection Microscopes	Purchase	$16,000	surgery	Space assigned to PI Banerjee
	2 Envorinmental Chambers	Purchase	$26,000	tissue culture work	Space assigned to PI Banerjee
	(2) REVCO minus 80 degree Freezer	Purchase	$20,000	introduce genes to cells	Space assigned to PI Banerjee
	Tissue culture hood	Purchase	$10,000	tissue culture work	Space assigned to PI Banerjee
	Ultra Centrifuge	Purchase	$80,000	separation of cells	Space assigned to PI Banerjee
Ribas					
	Double set of incubators	Purchase	$24,000	culture cells	Space assigned to PI Ribas
	Liquid nitrogen freezer	Purchase	$12,000	cryofreeze cells	Space assigned to PI Ribas
	(2) REVCO minus 80 degree Freezer	Purchase	$20,000	introduce genes to cells	Space assigned to PI Ribas
	Luminometer plate reader	Purchase	$30,000	measurement of protein	Space assigned to PI Ribas
	inverted microscope	Purchase	$10,000	visualize cells	Space assigned to PI Ribas
	Tissue culture hood	Purchase	$10,000	tissue culture work	Space assigned to PI Ribas
MacLellan					
	inverted microscope	Purchase	$10,000	visualize cells	Space assigned to PI MacLellan
	Tissue culture hood	Purchase	$10,000	tissue culture work	Space assigned to PI MacLellan
	Set of incubators	Purchase	$12,000	culture cells	Space assigned to PI MacLellan
	(2) REVCO minus 80 degree Freezer	Purchase	$20,000	introduce genes to cells	Space assigned to PI MacLellan
Zack					
	ultra centrifuge and rotor	Purchase	$42,000	concentrate virus	Space assigned to PI Zack
	2 Double CO_2 incubators (Napco 8000 Series)	Purchase	23,260	culture cells	Space assigned to PI Zack
	rtPCR machine	Purchase	$46,000	gene analysis	Space assigned to PI Zack
	2 Biological Safety Cabinets (Nuaire Lab Guard Nu 425)	Purchase	20,130	tissue culture work	Space assigned to PI Zack
	Liquid nitrogen freezer (Thermo Cryo 100)	Purchase	6,461	cryofreeze cells	Space assigned to PI Zack
	Inverted Microscope (Axiovert 40 CFL Carl Zeiss)	Purchase	15,194	visualize cells	Space assigned to PI Zack
	2 minus 80 degree freezers	Purchase	$20,000	introduce genes to cells	Space assigned to PI Zack

	2 Tissue culture hoods	Purchase	$20,000	tissue culture work	Space assigned to PI Zack
Galic					
	Double CO_2 incubator (Napco 8000 Series)	Purchase	11,630	culture cells	Space assigned to PI Galic
	Negative 80^0C freezer (Thermo ULT 2586 6A)	Purchase	8,629	introduce genes to cells	Space assigned to PI Galic
	2 Biological Safety Cabinets (Nuaire Lab Guard Nu 425)	Purchase	20,130	tissue culture work	Space assigned to PI Galic
	Liquid nitrogen freezer (Thermo Cryo 100)	Purchase	6,461	cryofreeze cells	Space assigned to PI Galic
	Upright fluorescence microscope w digital camera and computer	Purchase	$45,000	visualize cells & photography	Space assigned to PI Galic
	Standard Inverted Microscope	Purchase	5,880	visualize cells	Space assigned to PI Galic
	Totals		$1,184,775		

Attachment 4
Group 2 Equipment to be Purchased New (Cores)

New Group 2 Equipment (Cores)	Use	Budget	Relocated or Purchased New	Source of Funding	Suite / Room Location
Bioinformatics/Computation Core					
Apple Xserve with the following configuration (24 units at $22,349 8 core CPU, 2.8 GHz 16 GB RAM 1 TB inrenal Drive 12 TB extrenal SATA RAID Subsystem (Promise Vtrack E-cass	Compute and Storage Cluster				
Two 45U dour-post open frame rack	Racks for housing computers				
Two APC 1500 VA Uninterruptible power supply (UPS)	Emergency power supplies	$537,760	Purchased New	Broad Gift / Committed Campus Funds	3000A, 3000C, 3000D, 3000E, 3000G, 3000H
	Subtotal	**$537,760**			
Advanced-Vital Microscopy					
LSM 510 Duo Scan Microscope	used to visualize cells	$1,000,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
LSM Meta 2 Photon +Live	used to visualize cells	$180,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
AxioImager Z1 Microscope with Apotome Systemm	used to visualize cells	$140,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
AxioImager Z1 Microscope	used to visualize cells	$88,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
AxioObserver Inverted microscope with tracking system	used to visualize cells	$142,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
AxioObserver inverted Microscope	used to visualize cells	$102,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
	Subtotal	**$1,652,000**			
Advanced Mouse Genetics Core					
injection scope (Nikon with Narishge manipulators and Piezo)	injection of DNA into Cells	$76,797	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
surgery/transfer scope	used for injection of DNA	$13,153	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
dissection scope	miscroscope for surgery dissection	$7,302	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
TC hood	biosafety cabinet for tissue culture of cells	$7,800	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
needle puller (Sutter)	instrument to make very fine glass pipettes for injection of DNA into cells	$9,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
4N fusion chamber and power supply	supply regulator for equipment	$20,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
2 laser objectives ($20,000 each)	To perforating or create a “hole” on zona pellucida before ES cell injection.This is crucial in performing high success rate genetic modification	$40,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
	Subtotal	**$174,051**			
Bioengineering Core					
Equipment for Fabrication of Microfluidic Chips	**Use**				
2 x Spin Coater	casting photoresists and PDMS	$30,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
2 x Mixers	Mixing PDMS materials	$16,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 x optical microscope	Checking silicone replicates	$15,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 x oxygen plasma	Chip bonding	$25,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 x chemical fume hood	Chemical handling in clean room	$12,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
4 x Microfluidic-controllers	Chip Operation	$40,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab

	Subtotal	**$138,000**		
Equipment for Cell Biology	**Use**			
1 X Inverted microscope with CCD	Routine cell culture	$7,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 X Stero microscope with CCD	Routine chip-based cell culture	$20,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 X Fluorescent microscope with incubator	Cell-fate mapping experiment	$150,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 X Fluorescent microscope (automated stage)	Automated image acquisition and processing	$150,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
3 X Tissue culture incubators	Chip-based cell culture	$15,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
2 X Tissue culture hoods (6 footers)	Sample preparation	$16,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 X Desktop centrifuge + rotors	Cell culture	$13,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
2 X Robotic pipette	Large-scale cell culture/assay	$170,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
	Subtotal	**$541,000**		
Materials-Chemistry Laboratory Equipment				
	(The items below will be used in the preparation and characterization of new materials to be used in stem cell culturing.)			
1 X Chemical Inkjet printing system.	Used to pattern or array biomolecules (e.g. surface receptors or signaling molecules) to functionalized surfaces/materials that are being incorporated into ES culture	$130,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 X MicroRaman/FTIR microscope	Used for *in situ* spectroscopic characterization of cells and proteins on onto functionalized materials used for ES cell culture as well as surface chemical characterization of the surfaces of materials.	$250,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 X Surface Plasmon Resonance Imager	Used to characterize and image the adherence of proteins to surfaces at monolayer dimensions. Enables characterization of surface morphology of protein films or biomolecules	$40,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 X Spectroscopic ellipsometer	Used to determine the physical properties of protein layers that adhere to surfaces	$180,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
	Subtotal	**$600,000**		
	Bioengineering Core Total	**$1,279,000**		
Microarray-CGH Core				
1 x Solexa 1G Genome Analysis System				
Genome Analyzer + CS System (Analyzer & Cluster Station) (System includes the Solexa Genome Analyzer, Workstation Computer, Flat Panel Monitor, System Software, Installation Kits and Standards, Installation and Training, and 12 months warranty (including parts and labor) plus the system also includes the Solexa Cluster Station, Computer, Flat Panel Monitor, System Software, Installation Kits and Standards, and 12 months parts and labor warranty.)	High throughput sequencing for whole-genome sequencing, genome mapping, gene expression profiling, small RNA discovery, ChIP-seq	$430,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
Cluster Station (System includes the Solexa Cluster Station, Computer, Flat Panel Monitor, System Software, Installation Kits and Standards, and 12 months parts and labor warranty.)	Solexa Data Handling ($50,000 x 2)	$100,000 Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab

PE Module (Stand-alone)	Supplement to Solexa for De novo Sequencing ($45,000 x 2)	$90,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
(Includes the Solexa Paired End (PE) Module, Installation Kits and Standards.)				Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 year warranty for the entire system	Warranty ($40,000 x 2 x 5 years = $400,000)	$400,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
	Subtotal cost for Solexa technology hardware	**$1,020,000**			
Individual Reagent Kit					
400X RXN Genomic DNA Sample Prep Oligo Only Kit	Kitted oligos for Sample Prep	$19,600	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
50X Standard Cluster Generation Kits	Reagents for Genomic DNA Cluster Generation	$62,500	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
	Subtotal cost ($ 86,160 x 5y)	**$430,800**			
	Total cost (5yr)	**$1,450,800**			
Equipment for Genetic, Epigenetic, and Tissue Array Analysis (Microarray Core)					
1 x Agilent Microarray Scanner System (upgraded for 1M chips) (Bioanalyzer, Scanner, Hyb Oven, Database)	Expression, aCGH, ChIP-chip,CNV analysis, DNA methylation				
1M genome arrays (1 array/slide)					
500K arrays (2 arrays/slide, avg spacing 3Kb)	($700/slide)				
244K arrays (1 array/slide, avg spacing 6Kb;comes as CNV array or avoids CNV array)	($500/slide)				
	($575/slide)				
	Subotal cost Microarray hardware (end users buy arrays and supplies)	**$176,000**	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 x Mouse and Human SKY/Karyotyping System:					
1 x Zeiss Axio Imager Z1 (Applied Spectral Imaging)	Human/Mouse karyotype	$80,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 x Cytovision Karyotyping & M-FISH Station (CPU, Flat panel monitor, Jai digital camera, Interface-Cubes and Z-stacking) to Zeiss Imager, Karyotype software module, M-FISH Software module, 6-single bandpass filter cubes for M-FISH (its actually an interferometer) M-FISH, no mouse probes!! (Applied Spectral Imaging =Mouse too)*(robotics to find FISH targets- probably $25-50K)*		$45,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
Chemicals plus probes (~$200/slide)					
Reprogramming (project) 3 clones every 2 months=12/y					
Reprogramming (existing) 4 lines every 2 months = 24/y					
Derivation (Est. 6 lines/y) 6 lines every 2 months = 36/y					
4 federal lines every 2 months = 24/y					
9 non-federal lines every 2 months = 54/y					
15 existing WG lines every 2 months = 90/y					
Core iPS cells 3 clones every 2 months = 12/y					
Core (project) iPS lnes 4 clones every 2 months = 24/y					
Total: estimate 276 slides/year x 5y	$55,200/y x 5y =	$276,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
	Subtotal cost SKY for 5 years	**$401,000**			
1 x iCys upgrade of existing LCS analyzer for tissues	↑ throughput tissue quantifier	**$120,000**			
1 x -80°C freezer (e.g., Revco, 13.4 cu. ft.)	Storage of materials	$12,980	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 x -20°C freezer (e.g., VWR, 20.6 cu. ft.)	Storage of enzymes, Abs	$1,660	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 x Nanodrop Probe Quantifier (ND-1000 and ND-3300)	Probe quantification	$21,570	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 x SpeedVac (e.g., CentriVap DNA Concentrator)	Optical quantitation of DNA	$7,890	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 x Spectrophotometer (e.g. Beckman-Coulter DU730)	DNA fragment isolation and probe	$7,700	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
1 x UV light box/ digital camera system + gel imaging			Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
software and dedicated computer	QC documentation	$12,500	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab

2 x Computer workstations (with scanners and printers)	Miscellaneous (ordering, etc)	$8,000	Purchased New	Broad Gift / Committed Campus Funds	3009, 3009A2, 30009A3, 3009A4, 3009B, 3010, 3011, 3011A, lab
Estimated total cost for miscellaneous lab equipment Genomics/Epigenetics Core		**$72,300**			
Estimated total cost for Genomics/Epigenetics Core lab for 5 yrs		**$2,220,100**			
Vector Core					
Equipment for molecular biology procedures (Molecular cloning of viral vector constructs)					
1 x PCR thermocycler (e.g., Eppendorf, Bio-Rad)	Vector construction	$8,260	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x Laminar flow hood (for volatile chemicals)	Handling of volatile chemicals	$7,580	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x -80°C freezer (e.g., Revco, 13.4 cu. ft.)	Storage of bacterial stocks	$12,980	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x Bacterial shaker (floor model, Barnstead/Lab-line)	Large-scale bacterial cultures	$10,470	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x Low speed centrifuge +rotors (e.g. Beckman-Coulter floor model J6-MI $29,400 + rotors $2840, $2230)	Pelleting of bacterial cultures	$34,470	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x High speed centrifuge+rotors (e.g. Beckman-Coulter Avanti J26 $34,300 +rotors $5200, $7300)	Plasmid preparation	$46,800	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x SpeedVac (e.g., CentriVap DNA Concentrator)	Purification of plasmid DNA	$7,890	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x Spectrophotometer (e.g. Beckman-Coulter DU730)	Optical quantitation of DNA	$7,700	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x UV light box/ digital camera system + gel imaging software and dedicated computer	DNA fragment isolation and plasmid QC documentation	$12,500	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x Electroporation system (e.g., BTX model ECM830)	DNA electroporation into cells	$7,000	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
Subtotal cost to equip molecular cloning/ vector construction lab of vector core		**$155,650**			3045A1, 3045A2, 3032, lab
Equipment for cell culture procedures (Virus production, purification, concentration, and QC)					3045A1, 3045A2, 3032, lab
2 x Class II A/B tissue culture hoods (e.g., Labconco Purifier Delta model 6 ft hood, $9795 ea)	Production of small & large scale cultures of adenovirus, retrovirus, & lentivirus vectors	$19,590	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
2 x Tissue culture incubators (e.g., Revco Ultima II stacked double chamber CO2 incubator)	Virus ultraconcentration	$15,230	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x Ultracentrifuge + rotors (e.g., Beckman Optima $33,970 + SW28, SW41, 70TI rotors ~$9500 ea)	Virus filtration/ purification	$62,470	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x Desktop centrifuge + rotors (e.g., Beckman-Coulter Allegra X-15R $10,030 + rotor $3800)	Storage of virus preparations & mammalian cell stocks	$13,830	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x Large volume liquid nitrogen cell storage tank with automatic fill (e.g., CryoPro Autofill System)	Visualization of cell cultures & marker gene expression	$11,910	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x Inverted phase contrast/ fluorescence microscope w/ CCD camera +imaging software & computer (e.g., Olympus BX-60 $22,000 + SPOT system $9995)	Quantitation of marker gene expression	$32,000	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
1 x Analytical flow cytometer (e.g., Becton-Dickinson FACScalibur or Beckman-Coulter EPICS)	analysis of cells	$150,000	Purchased New	Broad Gift / Committed Campus Funds	3045A1, 3045A2, 3032, lab
Subtotal cost to equip cell culture/ virus production lab of vector core		**$305,030**			
Vector Core Subtotal		**$460,680**			

Bioinformatics/Computation Core Total	**$537,760**
Advanced-Vital Microscopy	**$1,652,000**
Advanced Mouse Genetics	**$174,051**
Bioengineering	**$1,279,000**
Microarray - CGH	**$2,220,100**
Vector	**$460,680**
Total Group 2 Equipment for the Cores	**$6,323,591**

Attachment 4
Group 2 Equipment Purchased Since August 24, 2007

Equipment purchased since 8/24/07	Use	Budget	Relocated or Purchased New	Source of Funding	Suite / Room Location
BD Flow Cytometer	isolate cells with specific characteristics, and characterize biochemical, genomic, and epigenetic properties	$967,876	purchased since 8/24/07	Non-CIRM Departmental Funds	BSRB, BSCRC Shared Resource
FACS Aria	separation of cells into different populations by cell types	$492,700	purchased since 8/24/07	Non-CIRM Departmental Funds	Current Witte Lab, MRL
Gel documentation system upgrade	image of proteins and nucleic acids	$21,488	purchased since 8/24/07	Non-CIRM Departmental Funds	Current Witte Lab, MRL
Upright fluorescence microscope	visualization of histology sections by bright field and fluorescence microscopy	$34,575	purchased since 8/24/07	Non-CIRM Departmental Funds	Current Witte Lab, MRL
double set of incubators	culture chamber for growth of cells	$16,077	purchased since 8/24/07	Non-CIRM Departmental Funds	Current Witte Lab, MRL
new file and print server	computers for storage and distribution of files	$14,551	purchased since 8/24/07	Non-CIRM Departmental Funds	Current Witte Lab, MRL
2-Mouse caging system with cages	ventilated racking system to hold mouse cages	$57,682	purchased since 8/24/07	Non-CIRM Departmental Funds	Current Witte Lab, MRL
StepOne rt PCR	amplify and quantify a targeted DNA molecule	$222,113	purchased since 8/24/07	Non-CIRM Departmental Funds	Current Witte Lab, MRL
Zeiss upright fluorescent microscope	cell examination	$60,000	purchased since 8/24/07	Non-CIRM Departmental Funds	Current MacLellan Lab, MRL
XYClone Objective and Laser	dissection of embryo to isolate ICM	$26,326	purchased since 8/24/07	Non-CIRM Departmental Funds	Deverivation lab, UCLA Factor Building

Total **$1,913,389**

Attachment 4
Existing Group 2 Equipment to be Relocated to the Facility

PI	Existing Group 2 Equipment to be Relocated	Relocate Existing or Purchase New	Budget (Existing)	Use	Suite / Room Location
Witte					
	Biosafety Cabinet	Relocate	$10,000	tissue culture work	MRL 5236
	double set of incubators	Relocate	$24,000	culture cells	MRL B536B
	table top centrifuge	Relocate	$10,000	separation of cells	MRL B563
	inverted fluoresence microscope	Relocate	$36,000	visualize cells	MRL B536B
	upright microscope with digital camera and computer	Relocate	$22,000	visualize cells & photography	MRL B536B
Kornblum					
	Cryostat	Relocate	$30,000	cutting sections of tissue	Crump Laboratory
	flouorescent microscope	Relocate	$30,000	visualize cells	Crump Laboratory
	Inverted Olympus fluorescent mircroscope	Relocate	$25,000	visualize cells	Crump Laboratory
Fan					
	N/A				
Banerjee					
	Environmental Chamber	Relocate	$20,000	tissue culture work	340/364 Boyer Hall
	Envorinmental Chamber	Relocate	$6,000	tissue culture work	340/364 Boyer Hall
	Confocal Microscope	Relocate	$300,000	visualize cells	340/364 Boyer Hall
	AxioPhot Zeiss Microscope	Relocate	$80,000	visualize cells	340/364 Boyer Hall
	AxioCam Luminar Zeiss Microscope	Relocate	$15,000	visualize cells	340/364 Boyer Hall
	Beckman Centrifuge	Relocate	$15,000	separation of cells	340/364 Boyer Hall
	Tissue Culture Hood	Relocate	$20,000		340/364 Boyer Hall
Ribas					
	Beckman Coulter Allegra 6.	Relocate	$10,000	concentrate virus or cells	10-661 Factor
	Labnet Hermle Z 383 K	Relocate	$15,000	concentrate virus or cells	12-638 Factor
	Incubators, two MCO-20AJC, one MCO-17AIC	Relocate	$13,600	culture cells	12-638 Factor
MacLellan					
	Biosafety Cabinet	Relocate	$8,000	tissue culture work	MRL3774
	Minus 80 degree freezer	Relocate	$10,000	introduce genes to cells	MRL3774
	Upright microscope with digital camera and computer	Relocate	$50,000	visualize cells & photography	MRL3774
Zack					
	2 Biological Safety Cabinets (Nuaire Lab Guard Nu 425)	Relocate	20,000	tissue culture work	BSRB Floor 1 Laboratory
	Negative 80^0C freezer (Thermo ULT 2586 6A)	Relocate	8,700	introduce genes to cells	BSRB Floor 1 Laboratory
Galic	N/A				
	Totals		**$768,300**		

CAPITAL IMPROVEMENT BUDGET

BUDGET DATA

UNIVERSITY OF CALIFORNIA

Los Angeles

Campus

Project Title:	Campus Reference	Asset No.	Cost Indexes
Life Sciences Replacement Building	943500	4395	CCCI: 4632 EPI: 2726

A FUNDING SCHEDULE Per 20 - 20 C.I.P., dated Univ. Priority No.

Totals (1000's)	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
	P 2,200				
	P [2,469] LB	W 4,740			
P 4,669		W [1,362] LB			
W 6,102		C 47,302	C 38,576		
C 141,107		C [38,169] LB	C 17,060 X		
E 3,500		E [3,500] LB			
$ 155,378 Tot Proj	4,669	95,073	55,636		

B FUNDING REFERENCES

	[1]	[2]	[3]	[4] Total All Sources	
Account No.					
Source					

C Costs

		[1]	[2]	[3]	[4] Total All Sources	%
	Site Clearance	$	$	$	$ 972,000	0.6%
1.	Construction				122,208,000	80.5%
2.	Exterior Utilities				1,245,000	0.8%
4.	Site Development				2,611,000	1.7%
5.	Fees				8,991,000	5.9%
6.	A&E/PPC				2,495,000	1.6%
7.	Surveys, Tests, Plans, Specifications				2,576,000	1.7%
8.	Special Items				5,152,000	3.4%
	SUBTOTAL	$ -	$ -	$ -	$ 146,250,000	96.3%
9.	Contingency 4.43%				5,628,000	3.7%
	TOTAL P-W-C	$ -	$ -	$ -	$ 151,878,000	100.0%
3.	Group 2&3 Equipment	-			3,500,000	
	TOTAL PROJECT	$ -	$ -	$ -	$ 155,378,000	
	Available Funding					
	Anticipated Surplus (Deficit)					

D FINANCING

{ Campus funding for demolition is in separate project – To be from 946069-DB }

Project 943500 Approp. Total to date: $ 99,767,000 ok
Additional State Funds Release Authorized: 38,579,000 ok
Additional Campus Funding Committed: 17,032,000
Total of Funding to be Available: $155,378,000 ok = CIB 11. ok

UCOP has authorized Award 5/16/07 to be from Campus Opportun. Funds (CB)

State Funds	$92,618,000
UC External Financing	$45,500,000
Campus Funds	$17,060,000
TOTAL	$ $155,378,000

E STATUS OF PROJECT

Award of Contract
Base Budget Number 1

Name: Stephanie Tollenaere SMT	Signature: S Santon	Budget No.	
Title: Principal Project Manager	Susan G. Santon, AVC, Capital Planning and Finance	Issue Date	5/3/2007
Prepared by: WTC	Approved for Campus. Date: 5/11/07	Revised	
Program: Fiscal:	Signature:	Revised	
	Title:	Revised	
Cost:	Approved for AVP-PPC Date.	Revised	

10/2002

Certification of Funds Availability – Bob Crawford 5/23/07 *See Note
Contract Award 5/23/07 Susan K Abeles 5/23/07

CAPITAL IMPROVEMENT BUDGET
ANALYTICAL DATA

UNIVERSITY OF CALIFORNIA
Los Angeles
Campus

Project Title:	Campus Reference	Asset No.	Cost Indexes
Life Sciences Replacement Building	943500	4395	CCCI: 4632 EPI : 2726

F ANALYTICAL DATA

	Column (1)			(4) Total All Sources
ASF per PPG				106,457 ASF
ASF Current				105,265 ASF
OGSF				176,590 OGSF
Ratio (ASF Current / OGSF)	to 1.00			61% to 1.00*
Construction Cost per ASF	/ ASF			$ 1,159 / ASF
Construction Cost per OGSF	/ OGSF			$ 692 / OGSF
Total P-W-C Cost per ASF	/ ASF			$ 1,443 / ASF
Total P-W-C Cost per OGSF	/ OGSF			$ 860 / OGSF
Gr. 2 & 3 Equip. Cost per ASF	/ ASF			$ 33 / ASF

G CONSTRUCTION COST ANALYSIS

	Cost	Unit Cost $ / ASF	Unit Cost $ / OGSF	%	Remarks
.Concrete & Structure	$				
.Closing - in					
.Finishing					
.Group 1 Equipment					
a. SUBTOTAL- Gen. Constr.	$	$	$		
b. HVAC					
c. Plumbing					
d. Electrical					
Elevators					
f. Other					* Identify:
TOTAL BUILDING COST ONLY	$	$	$	100.0	
g. Additional Bldg. Costs					* Identify:
TOTAL BUILDING + ADDITIONAL COSTS	$	$	$		
h. Other Construction		* Identify:			
i. Other Construction		* Identify:			
TOTAL CONSTRUCTION COST	$	* Same as Schedule C, Item 1 (line 24), Page 1			

H NOTES:

Special Items

EIR	$295,000
Independent Structural Review	$94,000
Value Engineering/Constructability	$215,000
Laboratory Consultant	$590,000
Historic Preservation Consultant	$20,000
Vibration Consultant	$76,000
Sustainability	$50,000
Wind Tunnel Test	$50,000
Existing Conditions Documentation	$30,000
Agency Fees	$95,000
Interest during constuction	$3,637,000
	$5,152,000

Budget No.	
Issue Date	5.3.2007
Revised	
Revised	
	1.0/1900
Revised	

TABLE OF CONTENTS

Billing Report

Billing #	Period	Projected Billing		Actual Billing	
		Cumulative Billing	% Complete *	Cumulative Billing **	% Complete *
1	June-07	$956,028	0.78%		0.00%
2	July-07	$1,918,210	1.56%	$2,198,895	1.79%
3	August-07	$3,209,492	2.61%	$3,705,880	3.01%
4	September-07	$4,877,366	3.97%	$5,349,275	4.35%
5	October-07	$6,914,766	5.62%	$7,846,088	6.38%
6	November-07	$9,510,771	7.73%	$11,489,754	9.34%
7	December-07	$12,530,552	10.19%	$14,869,233	12.09%
8	January-08	$16,186,973	13.16%	$17,945,368	14.56%
9	February-08	$20,375,801	16.57%		
10	March-08	$24,745,293	20.12%		
11	April-08	$29,846,439	24.27%		
12	May-08	$35,142,391	28.58%		
13	June-08	$40,909,023	33.26%		
14	July-08	$46,695,842	37.97%		
15	August-08	$52,806,390	42.94%		
16	September-08	$58,969,844	47.95%		
17	October-08	$64,914,691	52.78%		
18	November-08	$70,549,797	57.37%		
19	December-08	$75,552,688	61.43%		
20	January-09	$80,538,236	65.49%		
21	February-09	$85,300,597	69.36%		
22	March-09	$89,387,534	72.68%		
23	April-09	$93,657,404	76.16%		
24	May-09	$97,523,909	79.30%		
25	June-09	$101,239,712	82.32%		
26	July-09	$104,565,203	85.03%		
27	August-09	$107,726,440	87.60%		
28	September-09	$110,615,905	89.95%		
29	October-09	$113,163,304	92.02%		
30	November-09	$115,550,526	93.96%		
31	December-09	$117,636,276	95.65%		
32	January-10	$119,573,612	97.23%		
33	February-10	$121,304,010	98.64%		
34	March-10	$122,701,341	99.77%		
35	April-10	$123,037,487	100.00%		

CAPITAL BUDGET
Major Facilities Grant Program

CALIFORNIA INSTITUTE FOR REGENERATIVE MEDICINE

CIRM Application # FA100613-1

Project Title:	Number:	Prepared by: William T. Coleman
UCLA CIRM Institute	Applicant Reference # 943500	Phone #: (310) 794-7285
		Email: wtcolema@capnet.ucla.edu

line	COSTS/FUNDING	CIRM	Matching	Other	Total	%
1	Construction	$28,787,886	$0	$287,736	$29,075,622	89.7%
2	Construction support	$858,388	$0	$1,011,232	$1,869,620	5.8%
3	Design, struct/seismic		$0	$0	$0	0.0%
4	Design, Other		$0	$228,276	$228,276	0.7%
5	Proj Mgmt & admin		$0	$1,239,205	$1,239,205	3.8%
6	SUBTOTAL	$29,646,274	$0	$2,766,449	$32,412,723	100.0%
7	Contingency %		$0	$0	$0	0.0%
8	TOTAL P_W_C	$29,646,274	$0	$2,766,449	$32,412,723	100%
9	Group 2 Equipment		$5,929,255	$3,492,500	$9,421,755	
10	TOTAL PROJECT	$29,646,274	$5,929,255 *	$6,258,949	$41,834,478	

	ANALYTICAL DATA	CIRM funds		Matching+Other Funds	Total
	Assignable square feet				21,114 ASF
	Gross square feet				34,587 OGSF
	Ratio (ASF Current / OGSF)				61.0% to 1.00
	PWC Cost Per ASF	$1,404	/ASF	$131 /ASF	$1,535 /ASF
	PWC Cost Per OGSF	$857	/OGSF	$80 /OGSF	$937 /OGSF
	Equipment Cost Per ASF				$446 /ASF
	Equipment Cost Per OGSF				$272 /OGSF

NOTES (line number):

1 Prime contract and subcontracts for construction work subject to prevailing wage requirements

2 Construction support activities are performed by other than prime contractor or subcontractors such as institutional service (e.g. utility shutdowns,locksmith, commissioning, etc).

3 The portion of design fees related to structural engineering and seismic safety plan check

4 The remaining design fees (i.e. total design fees less line 3 amount)

5 The amount budgeted for project management inspections, testing, permits

7 The amount budgeted for change orders during construction; any net savings (after augmentations) will be shared with CIRM.

9 The amount budgeted for inventorial (Group 2) equipment to be capitalized as part of the project; leverage may include donated equipment.

10* The amount budgeted for matching funds must equal 20 percent of the CIRM funding.

Applicant: UCLA CIRM Institute

Life Sciences Replacement Building (LSRB)

COST PLAN SUMMARY				
W Submittal for LSRB		*Pre-Bid Estimate*		*Adjustment for Bid Variance*
		Construction Cost ($X1,000)		Construction Cost ($X1,000)
1. Foundations		7,478		7,669
2. Vertical Structure		6,970		7,148
3. Floor & Roof Structures		8,903		9,130
4. Exterior Cladding		10,735		11,009
5. Roofing & Waterproofing		1,032		1,058
Shell (1-5)		*35,118*		*36,014*
6. Interior Partitions, Doors & Glazing		4,093		4,197
7. Floor, Wall & Ceiling Finishes		3,063		3,141
Interiors (6-7)		*7,156*		*7,339*
8. Function Equipment & Specialties		6,413		6,577
9. Stairs & Vertical Transportation		1,462		1,499
Equipment &Vertical Transportation		*7,875*		*8,076*
10. Plumbing Systems		7,840		8,040
1 1. Heating, Ventilating & Air Conditioning		13,791		14,143
12. Electric Lighting, Power & Communications		9,710		9,958
13. Fire Protection Systems		965		990
Mechanical & Electrical		*32,306*		*33,130*
Total Building Construction (1-13)		82,455		84,558
14. Site Preparation & Demolition		460		472
15. Site Paving, Structures & Landscaping		1,503		1,541
16. Utilities on Site		778		798
Total Site Construction (14-16)		2,741		2,811
TOTAL BUILDING & SITE (1-16)		85,196		87,369
General Conditions	*12.20%*	10,394		**10,659**
Contractor's Overhead & Profit or Fee	*4.00%*	3,823		**3,921**
Escalation- 2.16 years	*9.51%*	20,479		**21,001**
CONSTRUCTION BUDGET		119,892		122,950
(at time of award)				
Variance				***2.6%***

LEVERAGE FUND CALCULATION		
Leverage Funds:		
total "other" funds from CIB Budget		$ 6,258,949
Adjustments		
Amount budgeted for fees exc struc	$ -	
Construction Amount x 10 percent	$ 2,878,789	
Amount Admin/design exceeds 10% (deduction)		$ -
Net Leverage funds		$ 6,258,949
CIRM Funds	$ 29,646,274	
Ratio of Leverage to CIRM Funds		**0.21**
Matching Funds	$ 5,929,255	
Leverage+ match Ratio to CIRM funds		**0.41**
Percentage of Project funded by CIRM	**70.9%**	
Percentage of Project funded by Applicant (after leverage adjustment)	**29.1%**	

DRAWDOWN SCHEDULE FOR RFA 07-03

			entry cells	calc cells
Project Costs	$ 41,834,478	To be spent: Cirm amount:	$ 29,646,274	
Spent to date	$ 4,679,838	Institutional Amount	$ 12,188,204	
Amount to Draw	$ 37,154,640			

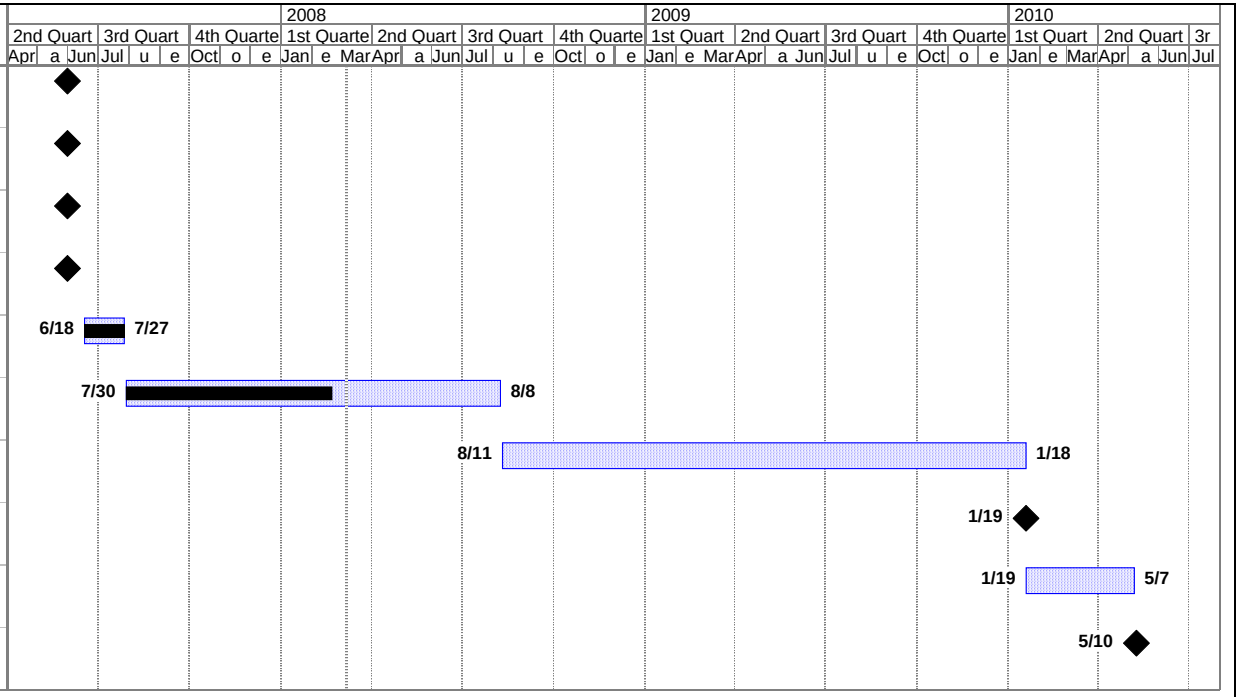
Project Award Date 01-Jul-08

	percent draw	Monthly Draw	Cumulative Draw	Monthly CIRM Funds	Cumulative CIRM Funds	Monthly Institutional (match + leverage)	Cumulative Institutional Funds
Spent to Date			$ 4,679,838				$ 4,679,838
Jul-08	7%	$ 2,600,825	$ 7,280,663	$ -	$ -	$ 2,600,825	$ 7,280,663
Aug-08	7%	$ 2,600,825	$ 9,881,488	$ -	$ -	$ 2,600,825	$ 9,881,488
Sep-08	7%	$ 2,600,825	$ 12,482,312	$ 294,108	$ 294,108	$ 2,306,716	$ 12,188,204
Oct-08	6%	$ 2,229,278	$ 14,711,591	$ 2,229,278	$ 2,523,387	$ -	$ 12,188,204
Nov-08	6%	$ 2,229,278	$ 16,940,869	$ 2,229,278	$ 4,752,665	$ -	$ 12,188,204
Dec-08	6%	$ 2,229,278	$ 19,170,148	$ 2,229,278	$ 6,981,944	$ -	$ 12,188,204
Jan-09	6%	$ 2,229,278	$ 21,399,426	$ 2,229,278	$ 9,211,222	$ -	$ 12,188,204
Feb-09	5%	$ 1,857,732	$ 23,257,158	$ 1,857,732	$ 11,068,954	$ -	$ 12,188,204
Mar-09	5%	$ 1,857,732	$ 25,114,890	$ 1,857,732	$ 12,926,686	$ -	$ 12,188,204
Apr-09	5%	$ 1,857,732	$ 26,972,622	$ 1,857,732	$ 14,784,418	$ -	$ 12,188,204
May-09	5%	$ 1,857,732	$ 28,830,354	$ 1,857,732	$ 16,642,150	$ -	$ 12,188,204
Jun-09	4%	$ 1,486,186	$ 30,316,540	$ 1,486,186	$ 18,128,336	$ -	$ 12,188,204
Jul-09	4%	$ 1,486,186	$ 31,802,725	$ 1,486,186	$ 19,614,521	$ -	$ 12,188,204
Aug-09	4%	$ 1,486,186	$ 33,288,911	$ 1,486,186	$ 21,100,707	$ -	$ 12,188,204
Sep-09	4%	$ 1,486,186	$ 34,775,096	$ 1,486,186	$ 22,586,892	$ -	$ 12,188,204
Oct-09	3%	$ 1,114,639	$ 35,889,736	$ 1,114,639	$ 23,701,532	$ -	$ 12,188,204
Nov-09	3%	$ 1,114,639	$ 37,004,375	$ 1,114,639	$ 24,816,171	$ -	$ 12,188,204
Dec-09	3%	$ 1,114,639	$ 38,119,014	$ 1,114,639	$ 25,930,810	$ -	$ 12,188,204
Jan-10	3%	$ 1,114,639	$ 39,233,653	$ 1,114,639	$ 27,045,449	$ -	$ 12,188,204
Feb-10	2%	$ 743,093	$ 39,976,746	$ 743,093	$ 27,788,542	$ -	$ 12,188,204
Mar-10	2%	$ 743,093	$ 40,719,839	$ 743,093	$ 28,531,635	$ -	$ 12,188,204
Apr-10	2%	$ 743,093	$ 41,462,932	$ 743,093	$ 29,274,728	$ -	$ 12,188,204

	percent draw	Monthly Draw	Cumulative Draw	Monthly CIRM Funds	Cumulative CIRM Funds	Monthly Institutional (match + leverage)	Cumulative Institutional Funds
May-10	1%	$ 371,546	$ 41,834,478	$ 371,546	$ 29,646,274	$ -	$ 12,188,204
Jun-10		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Jul-10		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Aug-10		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Sep-10		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Oct-10		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Nov-10		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Dec-10		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Jan-11		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Feb-11		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Mar-11		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Apr-11		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
May-11		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Jun-11		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Jul-11		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Aug-11		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Sep-11		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Oct-11		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
Nov-11		$ -	$ 41,834,478	$ -	$ 29,646,274	$ -	$ 12,188,204
	100%	$ 37,154,640		$ 29,646,274		$ 7,508,366	

revise form as needed to accommodate schedule

ID		Task Name
1	✓	Project Funding Approval-September 2005 / November 2005
2	✓	Project Design Approval-September 2005
3	✓	EIR Certification-September 2005
4	✓	Project Bid and Award-Spring 2007
5	✓	Contractor Mobilization
6		Excavation , Foundation and Structure Non-CIRM
7		CIRM Construction
8		Start Owner Furnished Equipment Deliveries
9		Project Start-Up and Certification
10		Beneficial Occupancy



Project: CIRM Project Schedule1
Date: Thu 3/6/08

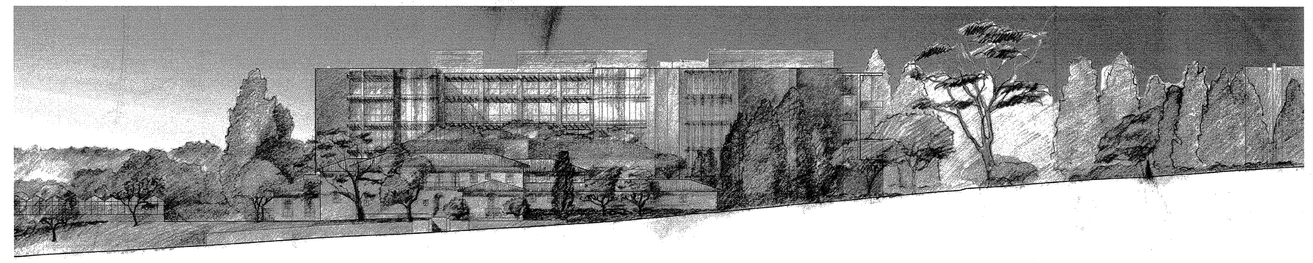
Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

University of California Los Angeles

LIFE SCIENCES REPLACEMENT BUILDING

UCLA Project No. 943500
BCJ Project No. 04311

Construction Documents - December 20, 2006



Volume 2: Lab Planning, Structural

DRAWING LIST

ARCHITECT
Bohlin Cywinski Jackson
123 S. Broad St. Suite 1370
Philadelphia, PA 19109
(215) 790–5900

ASSOCIATE ARCHITECT
stenforS|Associates
155 West Washington Blvd.
Suite 925
Los Angeles, CA 90015
(213) 744–0500

CIVIL & STRUCTURAL ENGINEER
KPFF Consulting Engineers
6080 Center Drive, Suite 300
Los Angeles, CA 90045
(310) 665–1536

MECH./ELEC./PLUMBING ENGINEER
Syska Hennessy Group
9665 Granite Ridge Drive
Suite 110
San Diego, CA 92123
(858) 244–0360

LABORATORY PLANNING
GPR Planners Collaborative, Inc.
420 Stevens Ave., Suite 150
Solana Beach, CA 92075
(714) 503–3400

LANDSCAPE ARCHITECT
Katherine Spitz Associates, Inc.
4212.5 Glencoe Ave.
Marina Del Rey, CA 90292
(310) 574–4460

WIND ANALYSIS
Cermak Peterka Peterson, Inc.
1415 Blue Spruce Drive, Suite 3
Fort Collins, CO 80525
(970) 221–3371

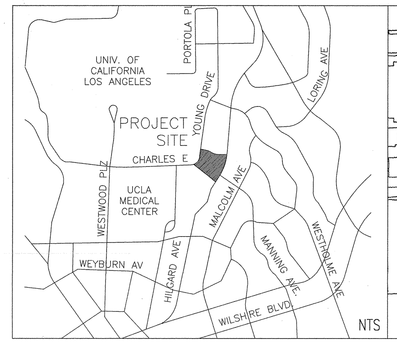
VIBRATION & ACOUSTICAL ANALYSIS
Acentech, Inc.
1429 E. Thousand Oaks Blvd
Suite 200
Thousand Oaks, CA 91362
(805) 379–3449

ELEVATOR CONSULTANT
Lerch, Bates & Assoc, Inc.
2529 Foothill Blvd., Suite 206
La Crescenta, CA 91214
(818) 957–4524

BUILDING MAINTENANCE
C.S. Caulkins Co., Inc.
P.O. Box 27547
Anaheim, CA 92809
714–921–5290

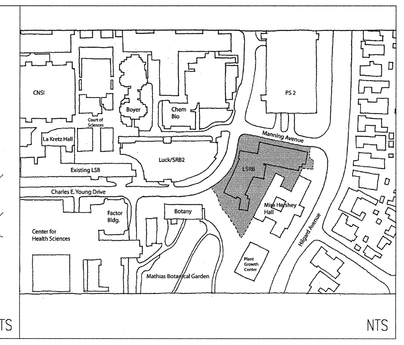
HARDWARE CONSULTANT
Jack Soeffing
341 West Allen's Lane
Philadelphia, PA 19119
(215) 247–5050

LOCATION MAP



NTS

VICINITY MAP



NTS

SYMBOLS LIST

- NEW METAL STUD PARTITION
- NEW CONCRETE WALL
- NEW BRICK WALL
- NEW CONCRETE MASONRY UNIT WALL
- A107 — NEW DOOR & FRAME W/ DOOR NUMBER
- EARTH
- COMPACTED GRANULAR FILL
- CAST-IN-PLACE/PRECAST CONCRETE
- BRICK
- ALUMINUM
- STEEL
- WOOD FINISH
- WOOD BLOCKING CONTINUOUS
- WOOD BLOCKING OR SHIM DISCONTINUOUS
- PLYWOOD / VENEER PLYWOOD
- GLASS - LARGE SCALE
- BATT/LOOSE FILL INSULATION
- RIGID INSULATION
- DRAINAGE FILL
- GROUT/ MORTAR/ CAST STONE
- B — COLUMN LINE
- A/2 — SECTION MARK (SECTION NUMBER / SHOWN ON DWG. NUMBER)
- NORTH ARROW
- 3 — REVISION
- SPOT ELEVATION MARKER
- M1.02 — INTERIOR ELEVATION MARKER
- A2.1 — ELEVATION MARKER
- A1.1 — DETAIL MARKER
- XXX — PARTITION TYPE
- ROOM NAME 101 / CLG X'-X" / WALL / FLR BASE / ex #XX — FINISH BOX

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APP# 109841
AC PS FLS — SS —
DATE 11/30/07

GENERAL NOTES

1. ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE.

2. UNLESS NOTED OTHERWISE ALL DIMENSIONS ARE FROM CENTER LINE OF COLUMN GRID TO FACE OF FINISH MATERIAL. ALL VERTICAL DIMENSIONS ARE FROM TOP OF STRUCTURAL SLAB ELEVATION TO FACE OF FINISH MATERIAL. SEE SHT A9.10 FOR ADDITIONAL DIMENSIONING GUIDELINES. HOLD INDICATED DIMENSIONS. DO NOT SCALE DRAWINGS. RESOLVE ANY DISCREPANCIES WITH THE UNIV. REP. BEFORE BEGINNING WORK.

3. IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND ALL SUB–CONTRACTORS TO COORDINATE THE WORK AND VERIFY ALL DIMENSIONS AND INSPECT CONDITIONS OF PRIOR WORK BY ALL TRADES BEFORE PROCEEDING WITH ANY WORK. UNACCEPTABLE OR INCORRECT PRIOR WORK SHALL BE REPAIRED OR REPLACED BEFORE STARTING WORK. PROCEEDING WITH THE WORK SHALL CONSTITUTE ACCEPTANCE OF PRIOR WORK.

4. ALL EXISTING CONSTRUCTION AND LANDSCAPE FEATURES THAT ARE TO REMAIN AS PART OF THE PROJECT SHALL BE PROTECTED FROM DAMAGE THROUGHOUT THE PERIOD OF CONSTRUCTION WORK. ANY DAMAGED CONSTRUCTION OR FEATURES SHALL BE REPLACED AT THE EXPENSE OF THE CONTRACTOR, TO THE SATISFACTION OF THE UNIVERSITY, WITH MATERIALS EQUIVALENT OR SUPERIOR TO THE ORIGINAL ITEM(S).

5. THE EXISTING CONDITION INFORMATION INDICATED IS BASED ON A SURVEY PROVIDED BY THE OWNER AND OTHER DOCUMENTS PROVIDED TO THE ARCHITECT BY THE OWNER. THIS INFORMATION IS NOT GUARANTEED AS TO COMPLETENESS OR ACCURACY. THE CONTRACTOR SHALL BE OBLIGATED AS A MATTER OF COURSE TO VERIFY, BY FIELD MEASUREMENTS, ALL SURVEY INFORMATION GIVEN. THE EXISTENCE AND LOCATIONS OF UNDERGROUND UTILITIES INDICATED ON THE DRAWINGS ARE NOT GUARANTEED AND SHALL BE INVESTIGATED AND VERIFIED IN THE FILED BY THE CONTRACTOR BEFORE STARTING ANY WORK.

6. GRADING AND PAVING ADJACENT TO THE PERIMETER OF THE BUILDING SHALL SLOPE AWAY FROM THE BUILDING AT A MINIMUM OF 1/4 INCH PER FOOT, UNO.

7. ALL ELECTRICAL OUTLETS, COMPUTER AND TELEPHONE OUTLETS/JACKS, SWITCHES, PULL STATIONS, THERMOSTATS, EXIT LIGHTS, AND ALL OTHER WALL MOUNTED ACCESSORIES SHALL BE ALIGNED VERTICALLY OR HORIZONTALLY WHEN IN CLOSE PROXIMITY. COORDINATION OF THIS ALIGNMENT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. LOCATIONS SHALL BE APPROVED BY THE UNIV. REP.

8. PROVIDE WOOD OR METAL BLOCKING AT PARTITIONS, CEILINGS, AND WALLS FOR ALL MOUNTED ACCESSORIES AS REQUIRED.

9. PLACING OF ACCESS DOORS IN GYPSUM BOARD CEILINGS UNLESS SHOWN ON THE ARCHITECTURAL DRAWINGS SHALL NOT BE ACCEPTED, UNLESS APPROVED BY UNIVERSITY REPRESENTATIVE. LOCATE AND INSTALL ALL WORK AS REQUIRED TO PRECLUDE THE NEED FOR ACCESS THROUGH THE CEILINGS. COORDINATION OF THIS REQUIREMENT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

10. SEE SPECIFICATIONS AND COLOR SCHEDULE FOR FINISHES. COORDINATE FINISH FLOORING COLOR AND PATTERNS WITH THE UNIV. REP. PRIOR TO BEGINNING THE WORK.

11. A KEYNOTE SYSTEM IS USED ON DRAWING A1.20 THROUGH A9.20 FOR MATERIALS REFERENCES AND NOTES. A COMPLETE KEYNOTE MASTER LIST IS ALSO LOCATED IN THE SPECIFICATIONS FOR REFERENCE.

EACH KEYNOTE CONSISTS OF A 5–DIGIT NUMBER FOLLOWED BY A LETTER SUFFIX. THE 5–DIGIT NUMBER RELATES TO THE SPECIFICATIONS SECTION WHICH SPECIFIES THE ITEM THAT IS REFERENCED. THE LETTER SUFFIX IDENTIFIES THE SPECIFIC REFERENCE NOTATION USED ON THE DRAWING. THE LETTER SUFFIX DOES NOT RELATE TO ANY CORRESPONDING REFERENCE LETTER IN THE SPECIFICATIONS.

THE ORGANIZATION OF THE KEYNOTING SYSTEM ON THE DRAWINGS, WITH THE KEYNOTE REFERENCE NUMBERS RELATED TO THE SPECIFICATIONS SECTIONS NUMBERING SYSTEM, SHALL NOT CONTROL THE CONTRACTOR IN DIVIDING THE WORK AMONG SUBCONTRACTORS OR IN ESTABLISHING THE EXTENT OF THE WORK TO BE PERFORMED BY ANY TRADE.

THE KEYNOTE MASTER LIST CONSOLIDATES ALL KEYNOTES USED ON ALL DRAWINGS. THIS LIST SHALL BE UTILIZED FOR CLARIFICATION OF KEYNOTES SHOWN ON A DRAWING BUT NOT INCLUDED ON THAT DRAWING'S KEYNOTE LEGEND. THE MASTER LIST IS HEREBY MADE A PART OF EACH DRAWING UTILIZING THE KEYNOTE SYSTEM.

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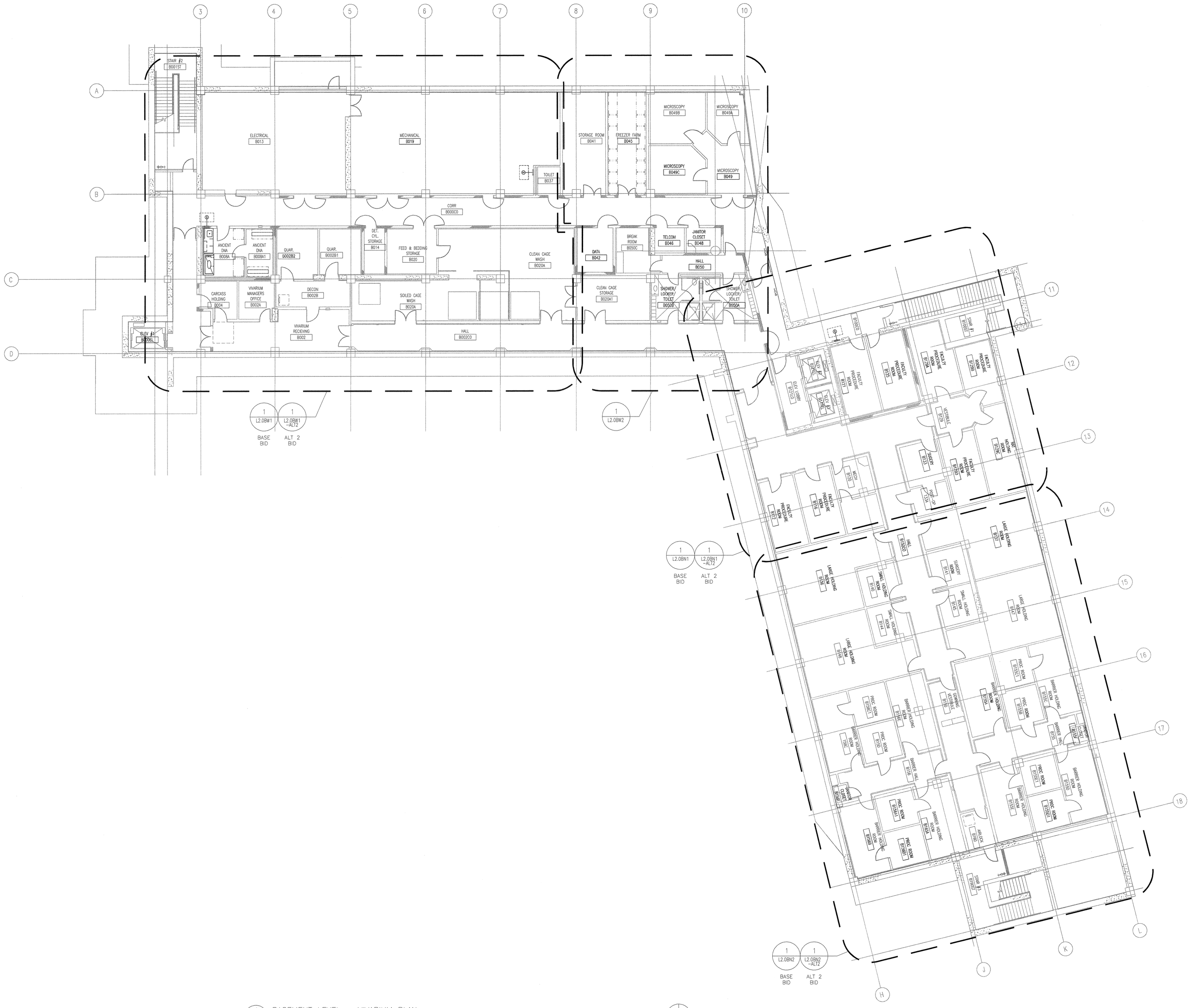
SOUTHERN REGION

LICENSED ARCHITECT
JON C. JACKSON
No. C-29647
REN. 3-31-07
STATE OF CALIFORNIA

CS4



1 / – BASEMENT LEVEL – VIVARIUM PLAN
SCALE: 3/32" = 1'-0"

REVISIONS

NO	DESCRIPTION	DATE

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APP-03-109841
AC Pa FLS — SS —
DATE JANUARY 30, 2007

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LICENSED ARCHITECT JON C. JACKSON NO. 027354 REN. 3-31-07 STATE OF CALIFORNIA

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Construction Documents

SHEET TITLE: BASEMENT LEVEL PLAN

SCALE: 3/32" = 1'-0"	DATE: December 20, 2006
DRAWN BY: AM	
CHECKED BY: JLH / GOF	
BCJ PROJECT NO.: 04311	SHEET NUMBER: L2.0B

1 / – LEVEL ONE – LAB FURNITURE PLAN
SCALE: 3/32" = 1'-0"

REVISIONS		
NO	DESCRIPTION	DATE

LICENSED ARCHITECT
JON C. JACKSON
NO. C27354
REN 3-31-07
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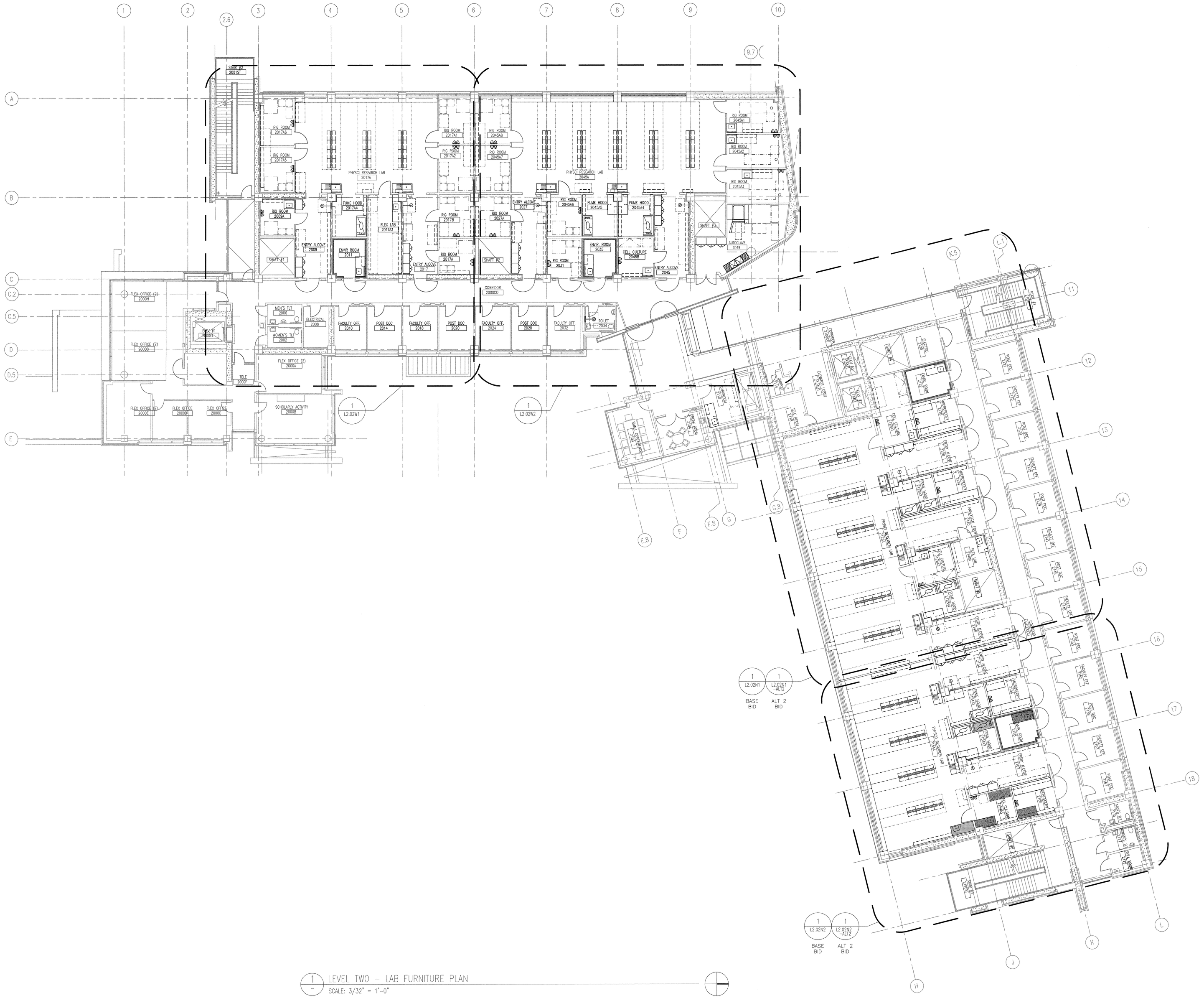
UCLA Project No. 943500

Construction Documents

SHEET TITLE: LEVEL ONE PLAN

SCALE: 3/32" = 1'-0"	DATE: December 20, 2006
DRAWN BY: AM	
CHECKED BY: JLH / GOF	SHEET NUMBER: L2.01
BCJ PROJECT NO.: 04311	



1 LEVEL TWO – LAB FURNITURE PLAN
SCALE: 3/32" = 1'-0"

REVISIONS		
NO	DESCRIPTION	DATE

LICENSED ARCHITECT JACON C. JACKSON NO. C27354 REN. 3-31-07 STATE OF CALIFORNIA

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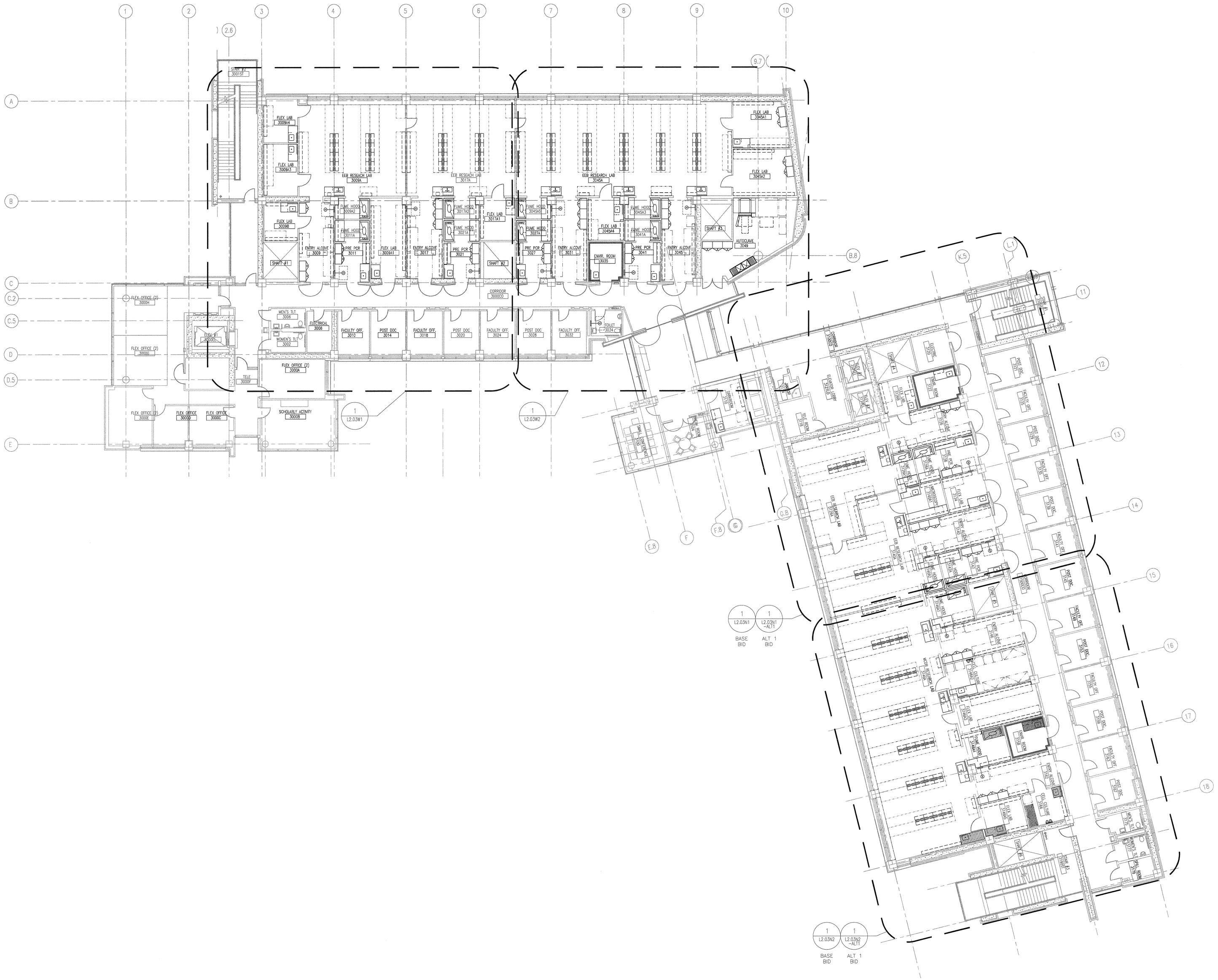
SHEET TITLE: LEVEL TWO PLAN

SCALE: 3/32" = 1'-0"	DATE: December 20, 2006
DRAWN BY: AM	
CHECKED BY: JLH / GOF	SHEET NUMBER: L2.02
BCJ PROJECT NO.: 04311	



1 LEVEL THREE – LAB FURNITURE PLAN
SCALE: 3/32" = 1'-0"

REVISIONS		
NO	DESCRIPTION	DATE

LICENSED ARCHITECT JON C. JACKSON NO. C27284 REN. 3-31-07 STATE OF CALIFORNIA
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SHEET TITLE: LEVEL THREE PLAN

SCALE: 3/32" = 1'-0"	DATE: December 20, 2006
DRAWN BY: AM	
CHECKED BY: JLH / GOF	SHEET NUMBER: L2.03
BCJ PROJECT NO.: 04311	